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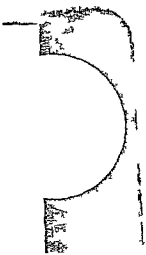
New York's Coastal Program

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NEW YORK STATE DEPARTMENT OF STATE  
Division of Coastal Resources and Waterfront Revitalization

# *New York's Eastern Lake Ontario Sand Dunes*

*Resources Problems and Management Guidelines*



Mario M. Cuomo Governor  
Gail S. Shaffer Secretary of State

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Albany, NY 12231

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# NEW YORK'S EASTERN LAKE ONTARIO SAND DUNES

## Resources, Problems and Management Guidelines

New York State Department of State  
Division of Coastal Resources and Waterfront Revitalization

Prepared By:

L.R. Johnston Associates  
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*"Let us accept the proposition that nature is process, that it is interacting, that it responds to laws, representing values and opportunities for human use with certain limitations and even prohibitions to certain of these."*

Ian L. McHarg in  
Design with Nature

*"Since this land was bought with my tax money, I can do whatever I want to here."*

*"The State bought this land to protect it, and I'm furious that they are not protecting it."*

Differing opinions expressed during summer of 1988  
by visitors to the State wildlife management areas  
in the eastern Lake Ontario coastal barrier system.

This report was prepared for the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, with financial assistance from the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, provided under the Coastal Zone Management Act of 1972, as amended.



## FOREWORD

This report presents the results of a special study of the sand dunes and coastal barrier environment found along the eastern shoreline of Lake Ontario in New York State. The purpose of the report is twofold. First, it is hoped that the information it contains will highlight the unique character of the coastal barrier system and increase the reader's awareness and understanding of the important natural resource values provided by the system. Secondly, it is hoped that those individuals and the various government agencies and private organizations concerned with future use and protection of the barrier system will take note of the management objectives, guidelines and recommendations contained in the report. These objectives, guidelines and recommendations are presented as examples of the types of management actions that can be undertaken to ensure the future protection of the barrier system's natural values while providing opportunities for public access and recreational use.

The report relies heavily on previously completed documents, studies and maps as well as field observations based on a number of visits to the barrier system and several reconnaissance flights. Most importantly, it incorporates the insight of many individuals intimately familiar with the barrier system. These individuals are perhaps the greatest source of information on barrier system resources and uses as well as the important problems that affect and may threaten the system's resources.

One of the most significant findings to emerge from the study concerns the surprisingly high level of awareness on the part of local residents as well as government agencies and private organizations as to the uniqueness and importance of the eastern Lake Ontario sand dunes and barrier system. As a result, there is a tremendous opportunity to translate this concern and awareness into specific actions and measures that will serve to protect this resource for the use and enjoyment of future generations.

This report is the first of several natural resource studies that have been initiated by the New York State Department of State through its Division of Coastal Resources and Waterfront Revitalization. As the agency responsible for administering the State's Coastal Management Program, the Department of State is actively involved in the protection of New York's coastal resources from the marine environment of Long Island Sound to the freshwaters of lakes Erie and Ontario.

Winner of the 1989  
OUTSTANDING PLANNING PROJECT AWARD  
Upstate New York Chapter  
American Planning Association

## ACKNOWLEDGMENTS

Many individuals, including private citizens and representatives of local, State and federal government agencies, have contributed to the preparation of this report.

While there is not space here to name all of the individuals who contributed to the study, the following groups and agencies are among those that provided important information and insights throughout our work:

- Local officials from the towns of Richland, Sandy Creek and Ellisburg.
- Private Organizations: The Nature Conservancy and the Onondaga Audubon Society.
- County Agencies: Oswego County Environmental Management Council; Oswego County Planning Department; Oswego County Soil and Water Conservation District; and the Jefferson County Planning Department.
- New York State Agencies: Department of Environmental Conservation, Regions 6 and 7; Office of Parks, Recreation and Historic Preservation; St. Lawrence-Eastern Ontario Commission; and New York Sea Grant Extension.
- Federal Agencies: U.S. Army Corps of Engineers, Buffalo District; U.S. Fish and Wildlife Service.

The Ontario Dune Coalition, consisting of local citizens, members of environmental groups and representatives of town, county, State and federal agencies concerned with the future use and protection of the unique sand dune resources of eastern Lake Ontario, provided valuable support and information throughout the study. Several members of the Dune Coalition also reviewed and commented on various interim documents prepared during the course of the work.

The report was funded by the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. Important leadership and direction were provided by Tom Hart and Nancy Nugent, the Department of State's Project Managers who also collaborated with L.R. Johnston Associates in the preparation of all sections of the report.

The report was prepared by L.R. Johnson Associates of Westport, Connecticut. From L.R. Johnston Associates, the following individuals participated in the study and contributed to the report: Larry Johnston; Geoff Steadman (Project Manager) and Louise Sklenka (word processing). Consultants to L.R. Johnston Associates were Stephen P. Leatherman (coastal geomorphologist) and Jon A. Kusler (legal and regulatory advisor). Photographs included in the report were taken by Larry Johnston and Geoff Steadman unless otherwise noted in the text.

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## INTRODUCTION

The sand dunes on the eastern shore of Lake Ontario are an integral part of a coastal barrier environment that consists of beaches, sand dunes, embayments and wetlands. This barrier system, which extends for roughly 16.5 miles, contains the largest and most extensive fresh water sand dune formations in New York State. In fact, the only higher dunes in the entire northeastern United States are on Cape Cod in Massachusetts.

The barrier system is located in a relatively remote area of the State and is a zone of harsh winter climate. The southern boundary of the barrier system is approximately 35 miles north of the Syracuse metropolitan area and the northern boundary is about 20 miles south of Watertown, New York. (See Figures 1 and 2.) The southern half of the system is located within the towns of Richland and Sandy Creek in Oswego County; the northern half lies within the Town of Ellisburg in Jefferson County. (See Figure 3.) Richland, Sandy Creek and Ellisburg are rural communities with respective 1980 populations of 5,594, 3,256 and 3,312.

On the south, the barrier system is physically bounded by the mouth of the Salmon River; on the

north, by Black Pond and the El Dorado Beach area. (See Figure 3.) New York Route 3 (part of the New York State Seaway Trail and the nationally-designated recreational highway system) generally follows the shoreline a short distance inland from the marshes and embayments which are sheltered from Lake Ontario by the beaches and sand dunes of the coastal barrier.

Land and water resources within the barrier system have historically not been subject to the same sorts of commercial and residential development pressures that exist in other coastal regions of New York State. The barrier system is in fact one of the last relatively undisturbed sections of New York's coast. In response to increasing development pressures and a growing recognition of the uniqueness of the barrier system, the Division of Coastal Resources and Waterfront Revitalization of the New York State Department of State initiated a special study of the barrier system in 1987. Major goals of the study have been to assemble information on existing conditions in the system and to develop management objectives and guidelines that will balance competing objectives of natural resource protection and public access and recreational use.

This special study reflects the increased concern over land and water resource management that is accompanying the increase in development pressures in the barrier system. Concerns over the future of the barrier system, and of the sand dunes in particular, are underscored by the fact that the environmental conditions which formed the dunes thousands of years ago no longer exist. If significantly altered, the dunes are unlikely to ever regain their current natural values.

The barrier system is currently subject to development pressures associated with:

- Growth of the Lake Ontario sport fishery, enhanced by salmonid stocking and promotional efforts which have led to the establishment of a multimillion dollar sport fishing industry;

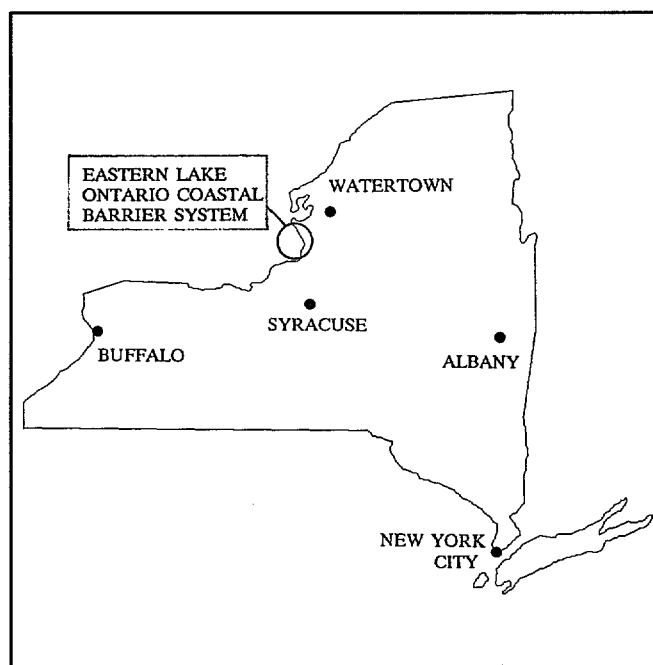


Figure 1: Location Within New York State.



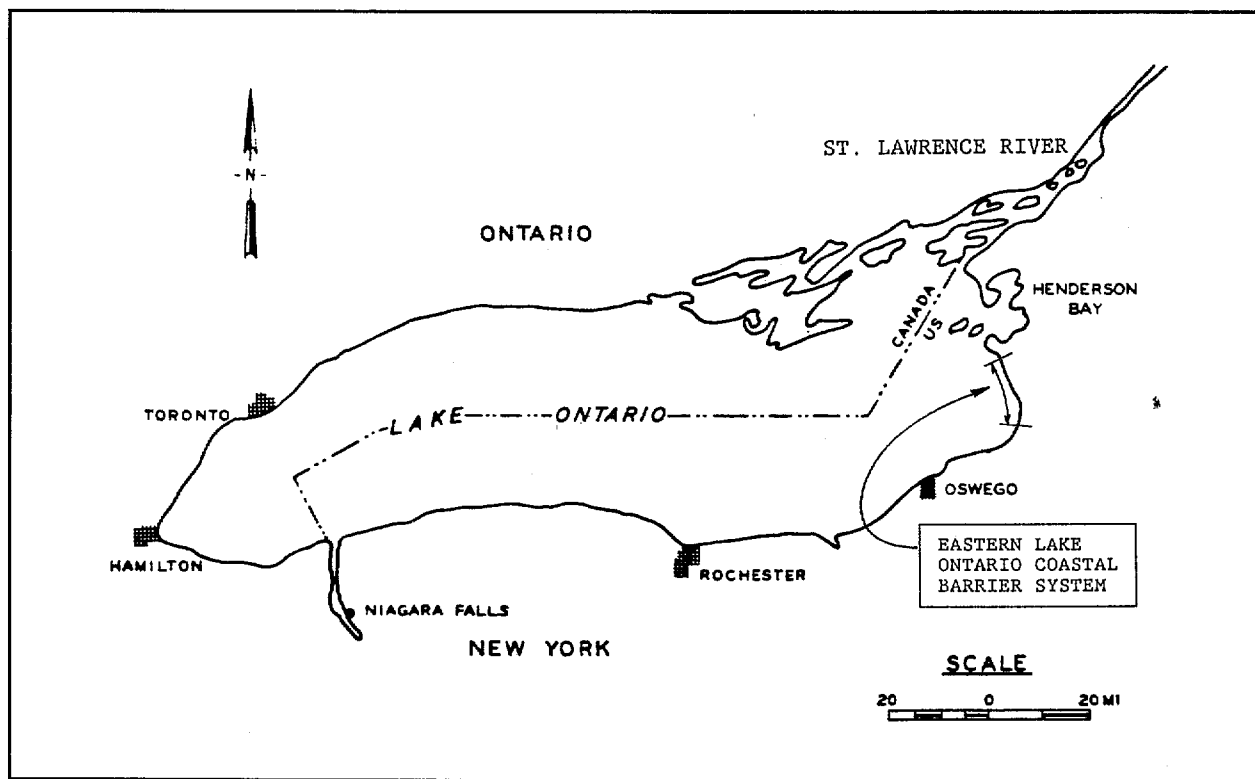


Figure 2: Location within Lake Ontario Region.

- The Army's ongoing Fort Drum expansion plans in Jefferson County (see Figure 3) which are expected to result in an influx of nearly 30,000 additional county residents, almost doubling the population within a half hour drive of the barrier system;
  - Promotion of the region to visitors and tourists through the New York State Seaway Trail development program; and
  - Increased second home development and recreational uses in the coastal area, especially those uses related to boating and other water-based activities.
- This report summarizes the results of the special State-sponsored study of the barrier system and is intended to: (a) promote public awareness of the importance of this unique natural resource; and (b) provide guidance to private citizens, local officials, State agencies and others with regard to future use, management and protection of barrier system resources. The report has eight chapters.
- **Chapter One: Background for Resource Management.** The first chapter contains background information pertinent to resource management, including general information and terminology related to coastal barriers, sand dunes and beaches, a review of historical and current conditions affecting sand dune formation in the area and a description of four major barrier system resource areas.
  - **Chapter Two: Current Roles and Responsibilities for Resource Management.** Chapter Two provides an overview of the existing roles and responsibilities of the agencies and organizations that are concerned with resource management in the barrier system.
  - **Chapters Three through Six: Special Resource Areas.** Chapters Three through Six contain more in depth descriptions of existing conditions in the barrier system's four major resource areas. These areas are: 1) Black Pond Resource Area; 2) Southwick-Lakeview Resource Area; 3) North and South Sandy Ponds Resource Area; and 4) Deer Creek Resource Area. Each resource area

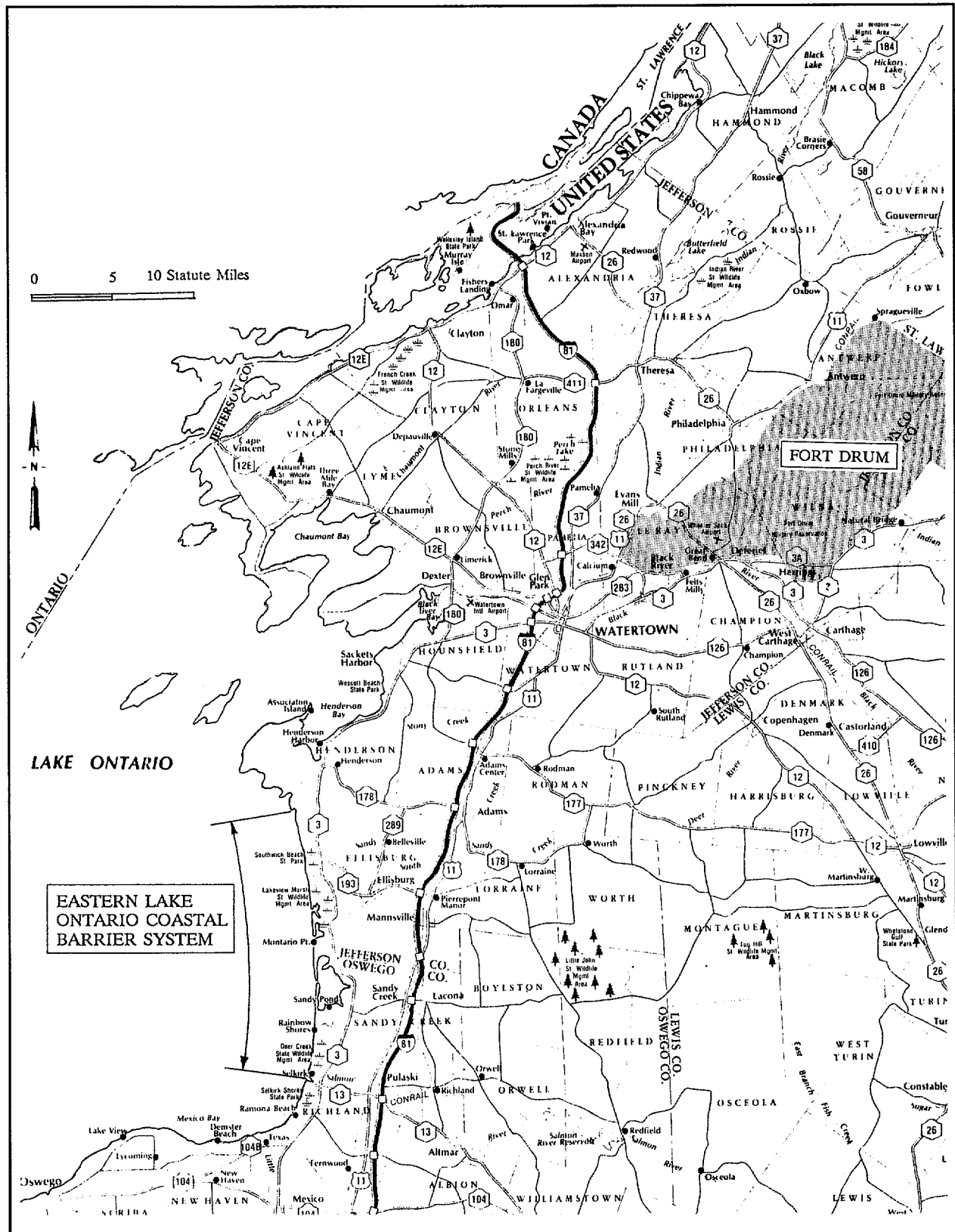


Figure 3: Eastern Lake Ontario Region.

is further divided into several "management units". Specific management concerns are identified and area-specific guidelines and recommendations for resource management are presented in each chapter.

- **Chapter Seven: System-wide Issues and Management Objectives.** This chapter summarizes system-wide issues and management concerns associated with existing conditions in the barrier system, and recommends some basic management objectives for responding to the issues and concerns throughout the system.
- **Chapter Eight: Implementation of Management Guidelines and Objectives.** Chapter Eight presents opportunities and suggested roles for implementing the management guidelines and objectives contained in Chapters Three through Seven. Included are recommendations for: 1) concerned citizens; 2) private organizations; 3) town boards and departments; 4) county agencies; 5) State agencies; and 6) federal agencies.
- **Appendix:** The appendix includes a bibliography of information sources pertinent to resource management in the barrier system.

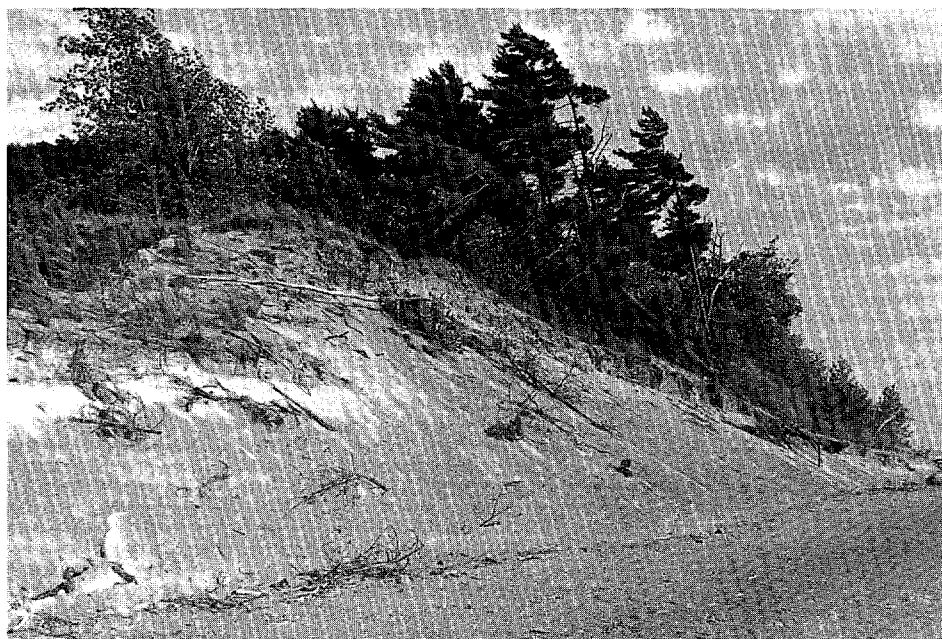
## CHAPTER ONE:

# BACKGROUND FOR RESOURCE MANAGEMENT

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*This first chapter presents an overview of existing environmental conditions in the eastern Lake Ontario coastal barrier system. Included is some background information on coastal barrier environments, an introduction to the four major barrier system resource areas (described in further detail in Chapters Three through Six), and a review of the historical and current conditions affecting sand dune formation.*

---



"Relict" sand dune on the North Spit at North Sandy Pond.

## BACKGROUND INFORMATION ON COASTAL BARRIER ENVIRONMENTS

As noted in the introduction to this report, the sand dune formations found in the eastern Lake Ontario region must be described in the context of a larger coastal barrier environment that also includes beaches, wetlands, embayments and tributaries. Before describing some of the existing barrier system resources along the eastern shore of Lake Ontario, it will be useful to review some general background information and terminology related to coastal barriers, sand dunes and beaches. (The background information on coastal barrier environments contained in this section is largely borrowed from the Barrier Island Handbook by Stephen P. Leatherman. See Appendix.)

### What Are Coastal Barriers?

Coastal barriers are elongated formations of sand and other unconsolidated sediments found alongside the shore or close to and parallel to the shore. The crests of these barriers are higher than the normal high water level.

The basic types of coastal barriers include *bay barriers* (connected to headlands on both ends), *barrier spits* (connected on one end) and *barrier islands* (bounded on each side by inlets without attachment to the mainland). (See Figure 4.) The eastern Lake Ontario region contains all three of these types of barrier formations.

Coastal barrier ecosystems. Because of the close interrelationship between coastal barriers, adjacent water bodies and the mainland shore, coastal barriers can be considered in the context of several major coastal *ecosystems*. In the Lake Ontario region, these ecosystems include: 1) the coastal ecosystem which encompasses nearshore lake waters and beaches; 2) the sand dune and upland ecosystem found on the barrier; 3) the protected aquatic habitat, including bays, ponds, and wetlands, located on the landward side of the barrier; and 4) the upland ecosystem of the protected mainland.

Beach Systems. A beach is defined as the zone of unconsolidated material extending landward from the low water line to the place where there is a marked change in material or physiographic form, or to the line of permanent vegetation (which usually marks the limit of storm waves). A beach includes a *foreshore* and a *backshore*. On Lake Ontario, the foreshore is the area subject to lake level changes and lies on the lake side of the berm crest. A *beach berm* is a nearly horizontal part of the beach formed by the deposit of material by wave action. The *berm crest* is the lakeward limit of the berm and is marked by an elevation step. (See Figure 5.) The *backshore*, including the berm, is the area subject to wave action only during high water and storm conditions.

Dune Systems. *Dunes* are ridges or mounds of wind-deposited sand found above the high water line. (See Figures 5 and 6.) Sand dunes may be formed where there is a large supply of sand, onshore winds

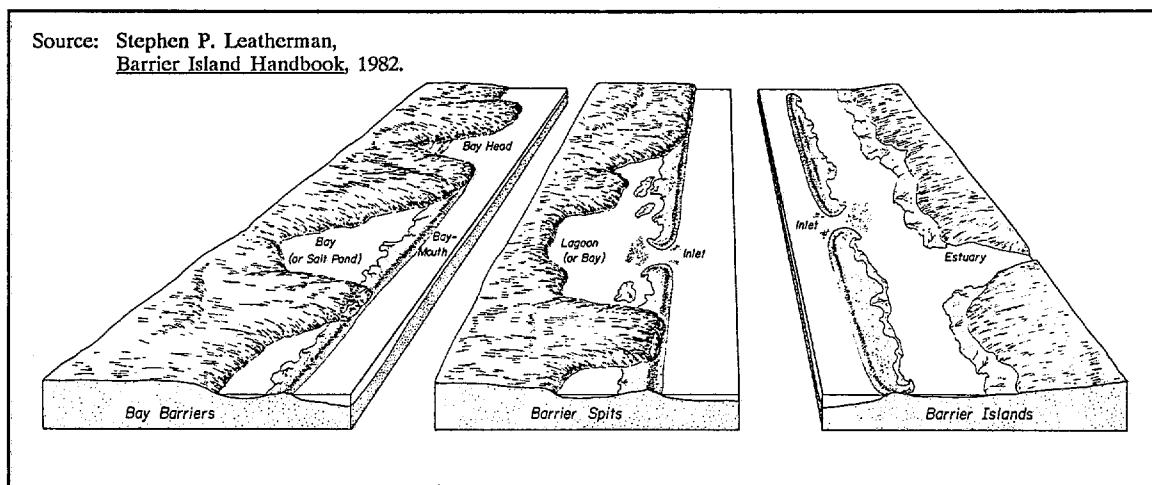


Figure 4: Basic Types of Coastal Barriers.

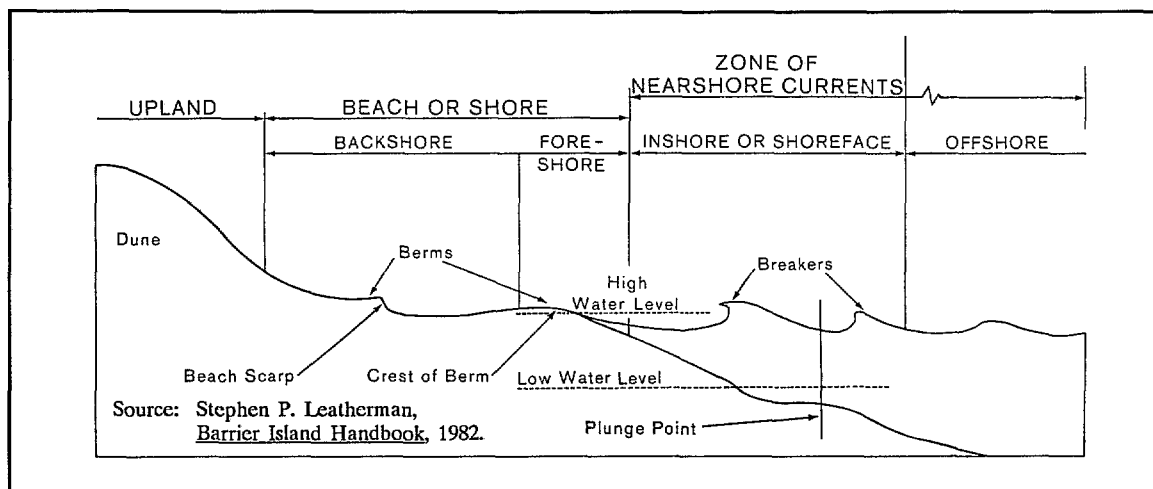


Figure 5: Beach Components.

to move the sand and a place where the wind-blown sand can accumulate. Wind velocities of 12 mph or greater are capable of moving fine, dried sand deposited on a beach by wave action to the area above the backshore, where dune formation occurs.

Vegetation is critical in the process of building and stabilizing a sand dune. In the eastern Lake Ontario region, as throughout the Great Lakes and entire northeast, the most important dune building and stabilizing plant is American beach grass (*Ammophila breviligulata*). (See Figure 7.) The presence of this vegetation reduces wind velocity, and thereby reduces the capacity of the wind to transport sand. The dune grass acts to trap the sand blown

from the beach. The plants can tolerate burial in the sand and grow upward with the accumulating sand so that the dune can build higher and remain relatively stable while sand continues to accumulate. (See Figure 8.)

There may also occur a series of *dune ridges*, usually but not always parallel to each other and the shoreline, which reflect the depositional history of the dune system. Where ridges exist, the dune formation closest to the beach and the water is commonly referred to as the *primary dune* or *foredune*, as distinguished from the inland or *secondary dune*. The area between two dune ridges is called a *trough* or interdunal area, and the landward side of the

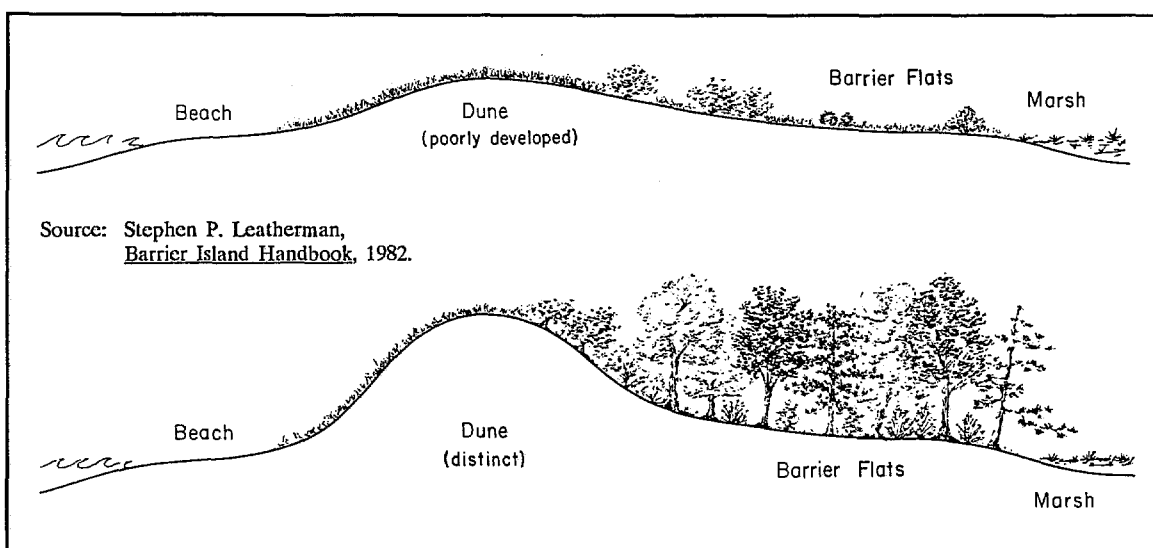


Figure 6: Typical Barrier Cross Section.



Figure 7: American Beach Grass on Low Foredune in the Lakeview Wildlife Management Area.

secondary dune is referred to as a *back dune*. In terms of the history of dune formation, the primary dune is of more recent origin than the secondary dune. (See Figure 9.)

As the vegetated dunes grow higher and wider, they may become colonized by other plants which add to the vegetative cover and stability of the dunes. The dunes will typically coalesce to form an interconnected dune ridge with an axis parallel to the shoreline.

### Coastal Barrier Dynamics

Barrier sediments are constantly being transported by wind, waves, currents and storm surges. As a result of their exposure to such natural forces, coastal barriers are constantly shifting in size, shape and relative position, and exist naturally in a state of "dynamic equilibrium". (See Figure 10.)

The long-term behavior of a coastal barrier depends on such factors as the supply of sand, energy from the sea or lake and human intervention. Sand supply is often the key to a barrier's evolution. The

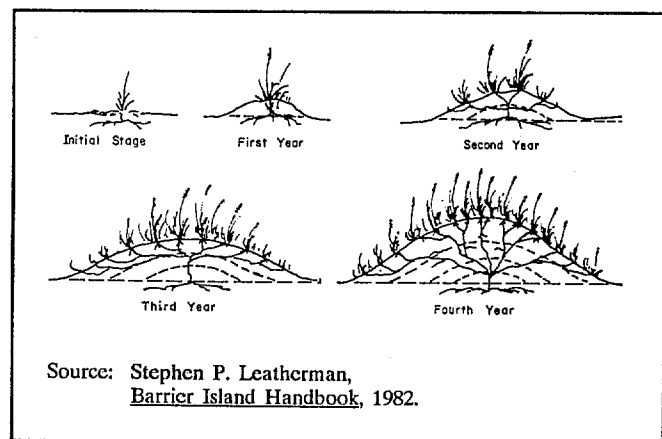


Figure 8: Dune-Building Vegetation.

continued growth and existence of a coastal barrier is dependent in large part on an adequate, uninterrupted longshore supply of sand. *Longshore sediment transport* (also known as *littoral drift*) is caused by waves striking the shoreline at an angle. The direction of transport is determined by the direction of wave approach relative to the shoreline. The cumulative effect of continuously breaking waves is to generate a steady, sediment-laden, longshore current moving downdrift of its origin. Wave conditions,

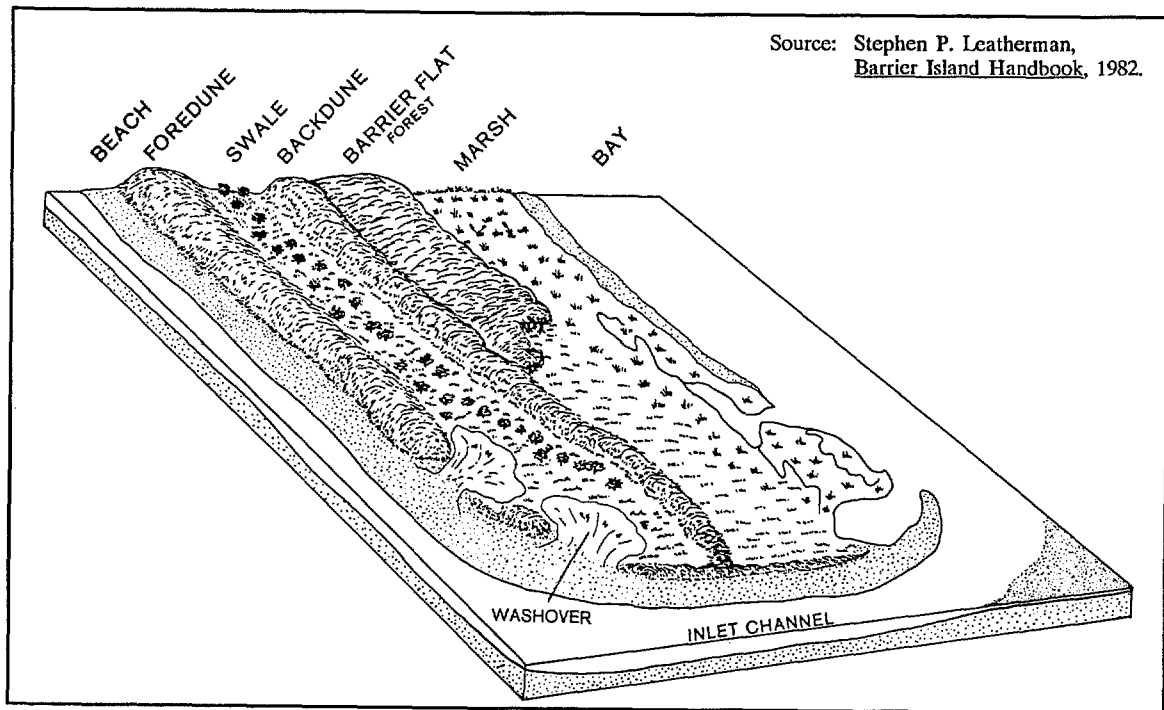


Figure 9: Some Typical Barrier Environments.

however, change almost constantly so that the quantity and direction of longshore sediment transport also changes.

With a relatively constant supply of sediment, the barrier can maintain itself in place and build upward. Landward migration or "retreat" can occur during storm conditions as a result of inlet dynamics and

overwash processes. Inlet formation is a major factor contributing to barrier island retreat. Where a barrier becomes very narrow, a new inlet may form during a severe storm and large quantities of sand can be carried through this breach into the embayment or wetland behind.

Barriers can also "roll-over" themselves into the

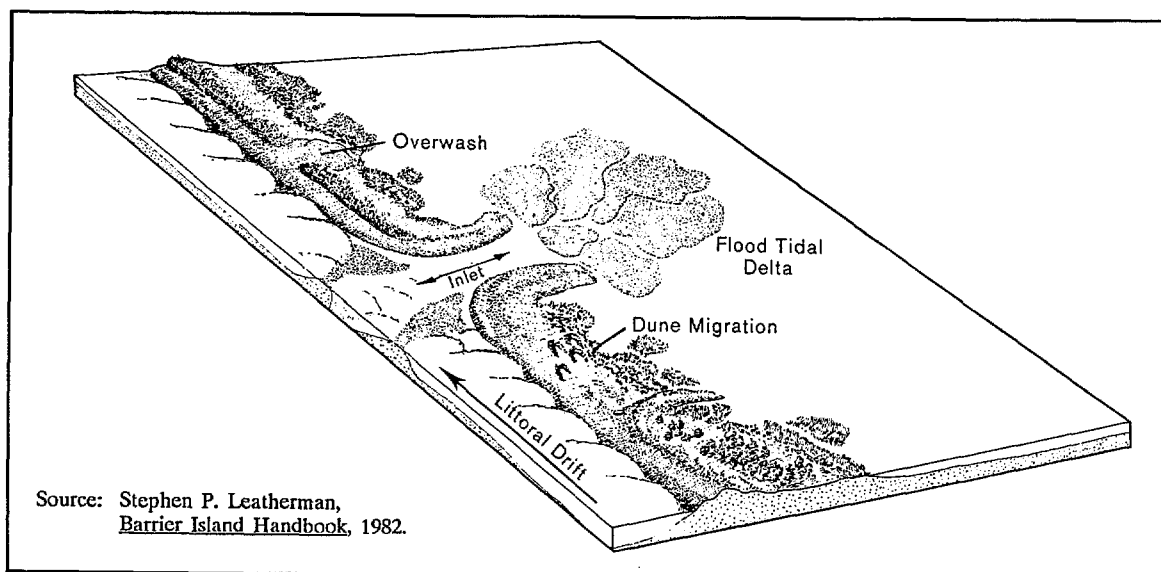


Figure 10: Barrier Migration Process.



marsh or bay behind. The most common cause of this roll-over phenomenon is breaching of the dunes by washover channels which may form during severe storm surges, carrying beach and dune sand into the back dune region and embayments. Wind-driven dune migration can also be a factor in the retreat of some barriers. Sections of dunes can be destabilized by wind, particularly when protective vegetation is damaged. These destabilized areas grow in size, funneling wind through the dunes and creating "blowouts" that can carry significant amounts of sand to the back of the dune formation.

The various mechanisms of barrier migration result in sand being pushed landward and upward over older, back-barrier environments. Rapid migration of coastal barriers may result in excessive filling of wetlands and embayments behind the barrier and rapid destruction of this aquatic habitat can result. Human disturbance can cause and/or accelerate the rate of dune and barrier migration. Conversely, human activities that prevent or slow sand movement (by planting stabilizing vegetation, for example) can reduce or eliminate dune and barrier migration.

### Natural Values of Coastal Barriers

Coastal barriers provide many natural values and this is especially true with regard to the eastern Lake Ontario barrier system. The term "barrier" reflects the protective aspect of these formations which serve to protect landward features such as bays, ponds, wetlands and the mainland shoreline from the direct effects of high water, waves and currents caused by both "normal" conditions and by severe coastal storms. Coastal barriers are, in effect, the first line of defense for large portions of mainland coastal areas against severe storms and the surge and wave impacts that can accompany these storms. The most significant period of vulnerability to these storms along the Great Lakes is in the spring when higher water levels are present. Winter storms are of less concern due to lower water levels during the winter months and the protective effects of shoreline ice formations which may extend over 30 miles into the lake at times.

Coastal barriers and associated wetlands and near-shore waters are especially important in maintaining

the natural productivity of the coastal environment and provide invaluable habitat for fish and wildlife. In addition, these areas often contain rare plants, animals and natural communities that are restricted to these types of shoreline areas. The marshes and bays protected by coastal barriers are among the most valuable and productive of all ecosystems. In many cases, the extensive aquatic habitats behind coastal barriers developed only after the barrier was formed, and these habitats would be quickly destroyed if the barrier were eroded and lost. Coastal barriers also provide aesthetic and cultural values as well as numerous recreational opportunities which contribute to making these environments desirable places to live and visit.

### Development Risk and Vulnerability

While coastal barriers serve as important buffers against mainland flooding and erosion, the barriers themselves are extremely vulnerable to these same impacts. This vulnerability stems from the lakeward exposure, the inherent instability of the shifting sediments and the relatively low-lying topography of these landforms. As already noted, the natural erosion and migration rates of coastal barriers are high. Lands considered for building sites one year may be highly eroded or simply disappear within several years as storm waves can breach and overwash barriers and entire barrier sections can be inundated or eroded.

In spite of the risks and the difficulties associated with maintaining stable development in an environment subject to constant change, increased residential and other types of development has occurred on coastal barriers throughout the U.S. in recent decades. Current development pressures on the eastern Lake Ontario coastal barrier system are consistent with the overall intense pressures for growth and development throughout the entire coastal area of the U.S. Coastal barriers throughout the U.S. are urbanizing at a rate twice that of the nation as a whole. In 1982, for example, only 3% of the mainland was considered "urban land", but 14% of the area of coastal barriers was urbanized according to the Conservation Foundation's State of the Environment, 1982 report.

Increased development on coastal barriers has resulted in large numbers of people and personal property being at risk to severe storms. This added development also creates another significant problem: it interferes with the natural ability of the barriers to absorb storm energies and provide protective functions for mainland development as well as for the aquatic habitats located between the barriers and the mainland.

Because of the vulnerability of coastal barriers, increased development has led to increased efforts to establish structural works intended to protect this development and the investments involved. Unfortunately, traditional shore protection and stabilization measures such as groins, jetties, bulkheads and seawalls interfere with the natural sand transport processes which contribute to the dynamic equilibrium of coastal barriers. In the longer term, these structural measures—together with other development impacts such as alteration of primary dunes, maintenance of navigation channels and ground water extraction and contamination—may seriously degrade or destroy the natural values of coastal barriers and may even destroy the barriers themselves. Historically, the dynamic and fragile character of coastal barriers has not been adequately reflected in private and public decisions affecting their protection or use.

## OVERVIEW OF EXISTING CONDITIONS IN THE EASTERN LAKE ONTARIO COASTAL BARRIER SYSTEM

The eastern Lake Ontario coastal barrier system lies within the western end of the Erie-Ontario Lake Plain which at one time was the bed of glacial Lake Iroquois. (See the section on historical and current conditions affecting dune formation beginning on page 15.) The barrier system's beaches, sand dunes, marshes and embayments are unique on the U.S. shore of Lake Ontario. The barrier consists of bay barriers, barrier spits and barrier islands, and exhibits typical foredune, swale, secondary dune and back dune environments in some sections. The upland area protected by this system consists largely of glacial drift shaped into a gently rolling to almost flat landscape dissected by many small water courses.

Four distinct areas of "high" dunes are found in the barrier system. The elevation of the highest of these dunes is estimated at 70 feet above current lake level. The only higher dunes in the northeastern United State are on Cape Cod. Some of the high dunes are covered in part with mature species of vegetation and are fronted (on the lake side) with a lower foredune. Other high dunes are located directly on the lake and have exposed sand faces subject to accelerated erosion. These high dunes directly on the lake were most likely once part of a backdune formation, and the original foredunes have long since been eroded. The high dunes might best be described as "relict" dunes formed thousands of years ago when, as the current evidence indicates, lake levels were much lower. Current estimates of the age of these dunes, however, are inferential conclusions based on lake level knowledge and are not based on direct dating methods.

Numerous small, wind-caused blowouts are found in the foredunes throughout the barrier system along with two very large blowouts. There is little evidence, however, of recent washover effects. These observations indicate that any landward migration or "rollover" of the Lake Ontario barrier system may be dependent on blowouts and the associated wind-driven movement of sand. The extent of barrier migration may be determined in large part by the extent of foredune stabilization by plants, principally beach grass (*Ammophila breviligulata*). Inlet formation and washovers appear to be of less importance than wind effects in influencing barrier system migration or rollover in the eastern Lake Ontario barrier system.

The barrier sediments are composed mostly of fine grained sand with varying amounts of gravel and cobbles. In general, the dune sand is extremely fine grained—about the most easily wind-transportable material there is. The near-shore lake bottom is generally composed of fine grained sand and dips lakeward at about 30 feet per mile.

## Coastal Processes Affecting the Barrier System

Little quantitative data exists on the directions and quantities of littoral drift in the eastern Lake Ontario region. The U.S. Army Corps of Engineers' Buffalo

District, however, has studied longshore sediment transport in the region in the course of designing the Port Ontario Harbor of Refuge Project at the mouth of the Salmon River. (See Figure 11 and Chapter Six.) The Corps has also addressed littoral drift relative to preliminary investigation of the feasibility of providing federal navigation improvements at the North Pond inlet. (See Chapter Five.)

The sediment transport patterns in the eastern Lake Ontario region are the result of waves acting on a shoreline shaped by glacial and post-glacial processes. The mouth of the Salmon River at the southern boundary of the coastal barrier system is located at the intersection of two very distinctive shoreline environments. The coastal barrier system extending northward for approximately 16.5 miles from the mouth of the river to Black Pond is characterized by an extensive, gently sloped offshore sand deposit and the series of narrow barriers which contain not only the high relict sand dunes but also more recently formed mid-size and embryonic dunes. Behind the barriers are shallow ponds, extensive coastal marshes and drowned river mouths. The shoreline south of the Salmon River is much different in composition. The shoreline here is characterized by a steeper and more irregular rocky offshore and by narrow gravel and cobble pocket beaches backed by high till bluffs and a few narrow drowned river mouths.

The cobble beach to the south of the barrier system and the fine, dune sand beaches of the barrier system represent two different sedimentary sources. The source of the cobbles and other coarse-size sediments to the south appears to be the erosion of the glacial till bluffs in the Mexico Bay area. (See Figure 11.) The fine sand found in the barrier system probably comes from continued erosion of the existing high dunes and from offshore deposits. The offshore sand deposits include finer sorted materials originating from the southern glacial till bluffs.

The eastern end of Lake Ontario is affected by wind-generated waves from the northwest through southwest quadrants. Stony Point to the north and Nine Mile Point to the south (see Figure 11) protect the barrier system from most oblique angles of wave approach. Longshore drift along the eastern shore is variable in both direction and rate due to the sheltering effects of Stony Point and Nine Mile Point

and due to the development of regional coastal currents. As observed by the Corps of Engineers, the general longshore drift is southerly from Stony Point and northerly from Mexico Bay, and these drift forces are thought to intersect midway in the barrier system in the area of North Sandy Pond. There is, however, no apparent geomorphic evidence (such as pronounced beach accretion) of this intersection. At the North Sandy Pond inlet, the dominant drift direction is generally thought to be to the south, although, as described below, opinions on the drift direction vary.

The apparent longshore drift at the mouth of the Salmon River is to the north, but an abundance of fine sand found south of the River mouth may indicate that there are periodic reversals in this drift. Observations at the River mouth are complicated by the River's own contribution of finer sediments which may have localized effects. Wind and wave data also suggest that there are frequent periods when wave approach is directly onshore, thus promoting on-shore-offshore sediment transport.

The barrier at North Sandy Pond in the center of the barrier system is subject to waves from the north-northwest through south-southwest. The Corps of Engineers notes that waves from the west and southwest are the largest (the 10-year deepwater wave height is about 19.5 feet) due to the long fetch distance. Wave height and frequency information for waves approaching at an angle greater than 30 degrees to the shore indicate that waves from the northwest are slightly larger than waves from the southwest. This would indicate the possibility of a minor southerly littoral drift in this central section of the barrier system.

Some, most notably Sutton and Trask (see Appendix), have questioned the existence of this southerly drift. Based on the textural and mineralogic variation of the sand found between Selkirk Shores (just south of the Salmon River) and Stony Point, Sutton (in "Sand Dispersal in Eastern and Southern Lake Ontario") interpreted the statistical trends to be the result of a net northward drift of sediment. Trask (in "Heavy Mineral Analysis of eastern Lake Ontario Sands") interpreted these variations to be relict and concluded that they would not have been preserved by a dominant northward

longshore drift, but instead would have been eliminated in a short period of time. He suggested that the barrier here has experienced an overall transverse rather than lateral movement of sediment, with no dominant longshore drift direction. Others, however, have suggested that recent migration of the inlet indicates northward sediment drift. Given the abundance of offshore sediment, the frequent direct wind approach, the relative protection from oblique winds which are necessary to drive littoral currents, and the inconclusive observations regarding the dominant direction of littoral drift, it seems likely that the onshore and offshore movement of sand may dominate the entire system.

While the eastern Lake Ontario barrier system serves as an important buffer protecting marshes, ponds and mainland shoreline from the direct effects of storms and high water, the barriers themselves are extremely vulnerable to these same impacts. Barrier systems generally survive by absorbing the energy of storms and waves through rapid erosion and then undergoing a rebuilding period which occurs under normal wave conditions. This rapidly changing physical environment means that existing development on coastal barriers can be severely damaged by storms. In the eastern Lake Ontario area, studies have documented long term shoreline recession rates from 1938 to 1974 to have averaged 1.86 feet annually. In an attempt to prevent shore damage, many shorefront property owners have built protective structures, most of which appear to be ineffective in providing adequate protection from shoreline erosion.

### Summary of Shoreline Development

Of the approximately 16.5 linear miles of Lake Ontario shoreline (measured between the Salmon River and Black Pond) contained in the eastern Lake Ontario barrier system, an estimated 6.7 miles, or 41%, is publicly owned, and an estimated 9.8 miles, or 59%, is privately owned. Of the publicly owned shorefront, 6 miles, or 90%, is contained within three State Wildlife Management Areas (WMAs), with the remaining 10% (less than one mile) within State park land. Of the privately owned shorefront, roughly 7 miles, or 73%, is in residential use, less than a mile of shoreline is in commercial campground use and

roughly 1.7 miles is undeveloped.

Approximately 8.5 miles, or 52%, of the shoreline is developed (residential, commercial campground, and State park use); 6.2 miles, or 37.7% of the total shoreline is undeveloped and protected (wildlife management areas and nature preserve); and about 1.7 miles, or 10.3% of the total shoreline is undeveloped, privately owned, and unprotected from development.

### Major Resource Areas

Four major resource areas can be identified within the coastal barrier system. These resource areas, described in some detail in Chapters Three through Six, can be defined by the major aquatic habitat areas (wetlands and embayments) protected by the eastern Lake Ontario barrier systems. These resource areas are: 1) Black Pond Resource Area; 2) Southwick-Lakeview Resource Area; 3) North and South Sandy Ponds Resource Area; and 4) Deer Creek Resource Area. (See Figure 11.) All four of these areas contain aquatic habitat areas designated as Significant Coastal Fish and Wildlife Habitats (see Chapter Two) designated by the State of New York.

#### 1. Black Pond Resource Area

This resource area contains the northernmost of the major wetland areas protected by the coastal barrier system. The barrier here contains a nature preserve owned and managed by The Nature Conservancy at El Dorado Beach and Black Pond, the State's Black Pond Wildlife Management Area and shorefront residential development. The barrier is particularly notable for the well developed and preserved high sand dune formations found in The Nature Conservancy preserve and the Wildlife Management Area and for the regionally significant habitat provided for large concentrations of shorebirds, waterfowl and migratory birds. The barrier has recently experienced increased use pressures as a result of the nearby State boat launch at Stony Creek. Development of cottages south of the wildlife management area has resulted in major modifications of the historical dune system in the southern portion of this resource area.

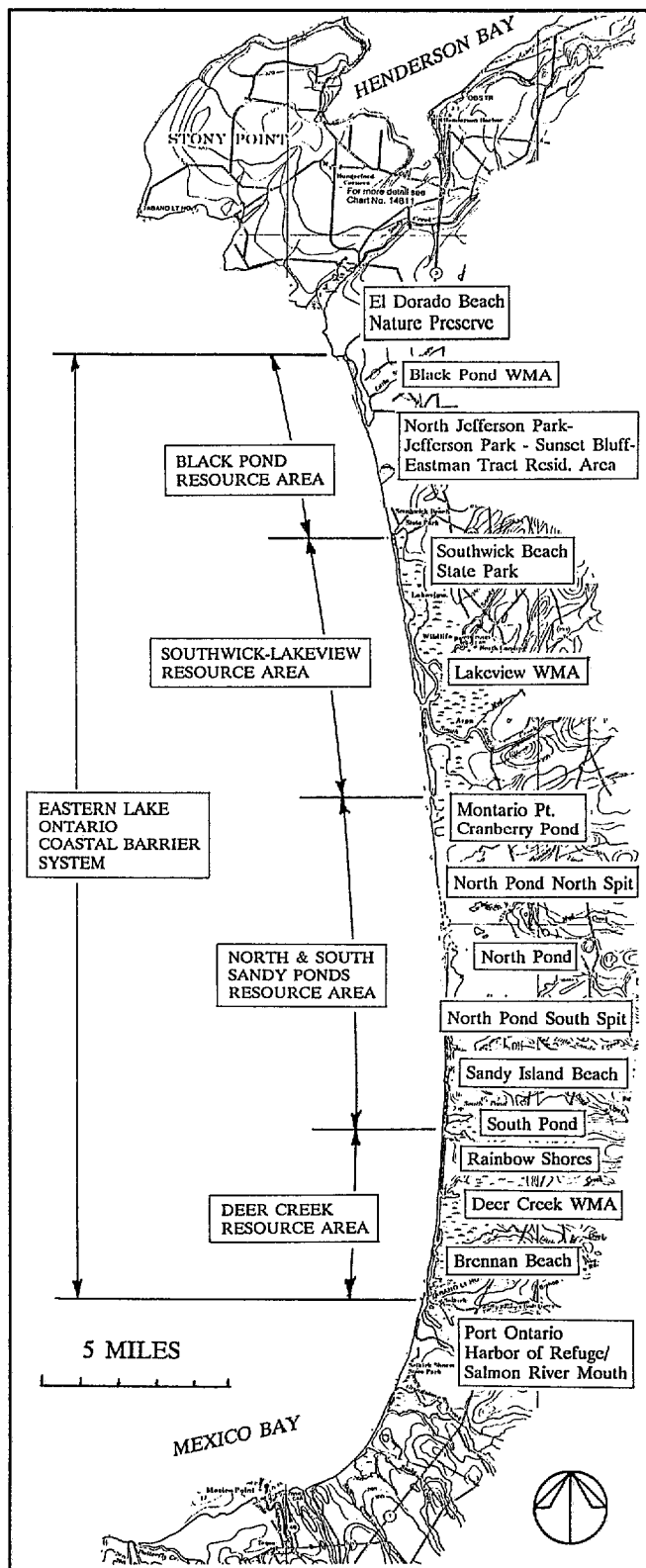


Figure 11: Major Resource Areas.

## 2. Lakeview-Sandy Creek Resource Area

This area contains Southwick Beach State Park and the Lakeview Marsh Wildlife Management Area, and is entirely owned by the State of New York. This area is expected to experience more intensive use pressures in the near future due in part to the Fort Drum expansion and the resulting increase in visitors to the State Park. The Wildlife Management Area (WMA) contains two barrier sections separated by the mouth of Sandy Creek. The northern section of the WMA bounded by the State Park is used for swimming and picnicking by people entering the area through the park; the southern section is less accessible by foot and less disturbed by human use. When the natural outlet of South Colwell Pond marking the southern boundary of the WMA is flowing, the southern barrier section becomes a barrier island. The aquatic habitat in the resource area has received the highest value ranking of the four significant coastal fish and wildlife habitat areas designated in the barrier system.

## 3. North and South Sandy Ponds Resource Area

The Sandy Ponds Resource Area is characterized by two barrier spits, the shifting North Sandy Pond inlet and two sets of high dunes which flank the inlet. The sand flats of each spit near the inlet provide regionally significant habitat for shorebirds and migratory species. The northern portion of the south spit contains the largest undeveloped, privately owned piece of land in the overall barrier system. The spits contain the two major blowouts found in the dune system. Also found in this resource area are shorefront residential development and a commercial campground site where the dunes are heavily impacted by human activities. Because it is sheltered from the open waters of Lake Ontario, North Sandy Pond supports intensive recreational activities (boating and fishing) during the summer months and several boating and marine access facilities have been developed on the pond.

#### 4. Deer Creek Resource Area

This resource area contains the Deer Creek Wildlife Management Area and privately owned sections of the Deer Creek Marsh. The barrier here is the most heavily impacted by human use of all the publicly owned barrier segments in the overall system. Included in the wildlife management area is the barrier system's fourth set of high sand dunes. Also included in this area is a commercial campground which is the most intensively developed section of the coastal barrier. The natural historical dune formations in the campground area have been largely destroyed.

### HISTORICAL AND CURRENT CONDITIONS AFFECTING SAND DUNE FORMATION

Perhaps the most dramatic features of the eastern Lake Ontario coastal barrier system are the extensive formations of sand dunes, some cresting at more than 70 feet above the surface of the lake, found throughout the system. These dunes are vital to the continuing integrity of the barrier system and a brief review of the geologic history of their formation is useful in understanding their significance as a natural resource. The most important point to be made in describing this history is that the climatic and geomorphic conditions under which the dunes were formed no longer exist. If destroyed, these dunes are unlikely to ever regain their current natural resource values.

The bedrock formations and bedrock topography of the eastern Lake Ontario region have a geologic history of over 400 million years. The surface formations and landforms, however, have a history going back no further than the final advance and retreat of the last glacier 10,000 to 20,000 years ago. As the last glacier (Wisconsin glaciation) receded across the present Lake Ontario Basin, melting water from the glacier formed glacial Lake Iroquois which extended far south of the existing Lake Ontario shoreline. The Lake Iroquois time period (approximately 12,000 years ago) serves as one benchmark used in describing the formation of existing landforms, including the sand dunes, in the

eastern Lake Ontario region. (Much of the following information on the geologic history of the region contributing to the formation of sand dunes is from "Post-Iroquois Lake Stages and Shoreline Sedimentation in Eastern Ontario Basin" by Sutton, Lewis, and Woodrow. See Appendix.)

#### Iroquois and Post-Iroquois Lake Stages

Beaches associated with Lake Iroquois have been identified on hills four miles east of the current lake shoreline at an elevation of about 600 feet above sea level (current lake level is approximately 244 feet above sea level). All of the North Pond area (see Chapter Four) was under water at this time. Following the Lake Iroquois period, four distinct lake level stages (Sandy Creek, Skinner Creek, Dune and North Pond stages) resulted in sand deposits of different types and in different locations in the coastal and upland areas of the Lake Ontario basin. (See Figure 12.)

During the Sandy Creek stage some 10,000 years ago, a fall in Lake Ontario water level caused erosion of a large portion of the Ontario basin, exposing sands, gravel and clastic deposits along the shoreline. During this stage, the North Pond area was the site of a large open bay. Evidence of beach sand and dunes from this lake stage is found three miles east of the current eastern shoreline of the lake near the 300 foot elevation.

Following the Sandy Creek stage, the lake level dropped to an elevation 255 feet above sea level or about 10 feet above the current lake level, where it remained for some time. During what is called the Skinner Creek stage, a bar formed at the site of the present North Pond barrier and created a large embayment (North Pond) to the east. Water level continued to fall along the eastern shore of the lake until a level some 30 feet below the present level was reached. This low level marks the Dune stage which is estimated to have occurred some 5,000 years ago. The existence of this stage is inferred from the presence of the existing sand dune formations, particularly those which crest at near 70 feet in height. It is reasoned that dunes of this size could not have formed at the present water level and that a level some 30 feet lower than at present would

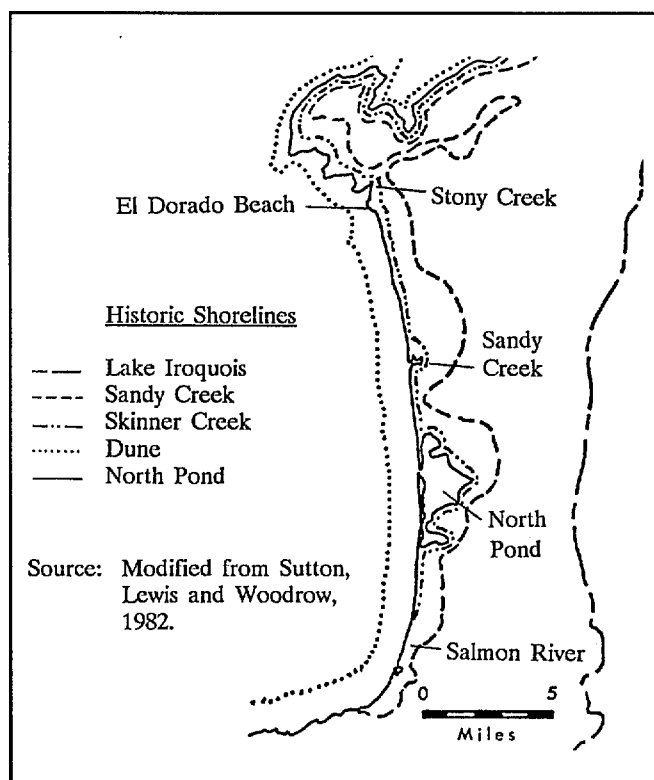


Figure 12: Eastern Lake Ontario Shorelines Associated With Historical Lake Stages.

have been required to provide a beach of sufficient width to serve as an adequate source of dune-building sand.

At the northern end of the existing dune system, drowned valleys are found offshore at Black Pond and the mouth of Stony Creek. Both valleys extend to a depth of 25 feet and are interpreted as marking the shoreline of the Dune stage in that area. (See description of Black Pond Resource Area in Chapter Three.)

Following the Dune stage, lake level began to rise and resulted in gradual submergence of the beaches, drowning of the lower parts of the stream valleys and destruction of an unknown number of dunes and nearshore beach and barrier features. Water continued to rise during this period (called the North Pond stage) until a lake level several feet above the approximate current level was reached.

### Origin of Eastern Lake Shore Sediments

Following the rapid fall of lake level from Iroquois stage to Sandy Creek stage, a large portion of the Lake Ontario basin was exposed to stream erosion. Following the Sandy Creek stage, rapid tilting of the basin toward the west resulted in the emergence of the eastern shore and drowning of the western shore of the basin. Beaches on the western shore were lowered below the zone of effective wave and current action, and thus were removed as sources of sand for transport toward the eastern end of the lake. On the eastern shore, however, the beaches were elevated, permitting continued erosion of these sands and gravel and their redistribution along this same eastern shore.

By the Dune stage, a broad sand flat had accumulated along and offshore of the beach. This sand flat was created by the continued erosion of the eastern shore, the abundance of sediment sources and, to a lesser extent, by easterly lake currents transporting sands from sources along the southern shore of the lake. Sands were blown landward by the wind off the sand flat of the eastern shore and the high dunes which are found on the barrier system today were created.

During the period of rising water level from Dune stage to North Pond stage, the relative importance of the earlier sediment supply areas changed. Decreasing tilt rates resulted in more thorough erosion of the southern nearshore and shoreline area resulting in a shelf that extended from the Niagara River to Mexico Bay. Most of the sands were removed from this area and carried eastward. Gradual drowning of the eastern shore caused streams in that area to provide relatively less sediment to the system.

Since the North Pond stage, the decreasing tilt rate in the basin and corresponding decreases in the submergence of the eastern and southern shore resulted in a diminishing supply of sands from all sources. A steady eastward migration of sands continued so that these sands are now concentrated at the eastern end of the lake. A slow and generally northward migration of material from Mexico Bay may now be exposing lag gravel that had been

concentrated there during Dune stage time.

Unless a significant change in lake level occurs in the next few hundred years, it has been postulated that the current sand deposits along the eastern shore will migrate northward, progressively uncovering Dune stage gravel that generally would remain as lag deposits. If this migration does, in fact, take place, sources of sand for replenishing the existing dunes will diminish, and there is concern that the barrier will gradually diminish and the currently protected wetlands, embayments and mainland too will be increasingly exposed to the wind, waves, and high water.

### Current Lake Levels

The level of Lake Ontario continues to exert a major influence on dune formation and erosion in the eastern Lake Ontario region. The relatively low lake levels recorded in 1987 and 1988 favored sand dune replenishment and resulted in a decreased erosion rate. Lake levels recorded in recent years are less than long-term average levels and represent a dramatic change from the high levels experienced in the mid part of this decade. A warm, dry spring brought the level of the lake down to 244 feet in October of 1987—close to average for this century but in marked contrast to the higher levels of the past 15 years, when heavy rains in the Upper Great Lakes led to record runoff into Lake Ontario. When the water is low there is more sand available for dune replenishment for two main reasons: 1) wave action can move more offshore deposits onto the beach; and 2) more sand is exposed on the beach and available for transport inland by winds.

Like the other Great Lakes, Lake Ontario exhibits water levels subject to both short and long-term fluctuation. (See Figure 13.) The most dramatic short-term changes in water levels are caused by strong winds and by sharp differences in barometric pressure. Seasonal fluctuations, caused by melting snow, low evaporation rates and heavy spring rains, result in "normal" spring and early summer peaks. Higher summer and fall evaporation rates and generally lower rainfall result in a lowering of the lake's level beginning in mid to late June. In the winter, water is tied up in ice and snow resulting in

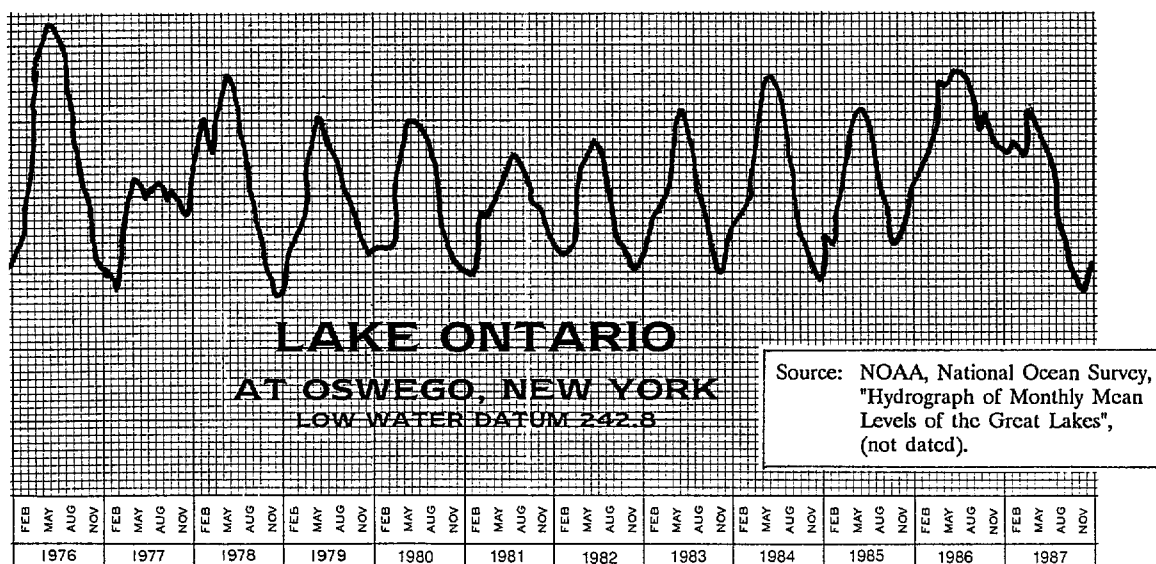
an annual low level in January. The yearly fluctuation in lake level is about two feet.

Longer term fluctuations in water levels have also occurred continually throughout the geologic history of Lake Ontario. Longer term fluctuations have been measured at five to six feet between record lows and record highs. Since modern lake level measurements began in 1860, high water periods have occurred in the late 1920s, mid-1940s, early 1950s, early 1970s and mid-1980s. These long term fluctuations are not predictable and are caused by a number of natural (e.g., precipitation, runoff, temperature) and man-made (e.g., dredging, diversion, regulation of outflow) factors.

In terms of elevation, Lake Ontario is the lowest of the Great Lakes. Although not the smallest in volume, it has the smallest surface area. It receives outflow from the other four lakes as water moves through the Great Lakes system. Under natural conditions, the outflow of Lake Ontario through the St. Lawrence River was solely a function of the water level of the Lake and the channel size of the river. When the Lake level was high, the depth of the water at the outlet was greater and more water flowed into the St. Lawrence River. The channel size of the St. Lawrence River controlled how much water could actually leave the lake at times of high water.

Today, however, power generation and navigation works on the St. Lawrence River influence river flows and lake levels, allowing for a certain amount of regulation and providing a small amount of buffering against high and low water levels. Since 1958 the outflow of Lake Ontario has been regulated by the International St. Lawrence River Board of Control under plans approved by the International Joint Commission. Although regulation can affect the level of the Lake, the most critical factors affecting lake level remain natural factors such as precipitation over the entire Great Lakes Basin. For the most part, the Great Lakes act as a natural system, and water will flow through the system only as quickly as natural conditions will allow. Current structures to regulate outflow cannot alter long-term lake level trends, cannot influence lake levels significantly in the short term and can only partially alter or alleviate lake level extremes.





Relative Mean Water Levels of Lake Ontario from 1976 Through 1987.

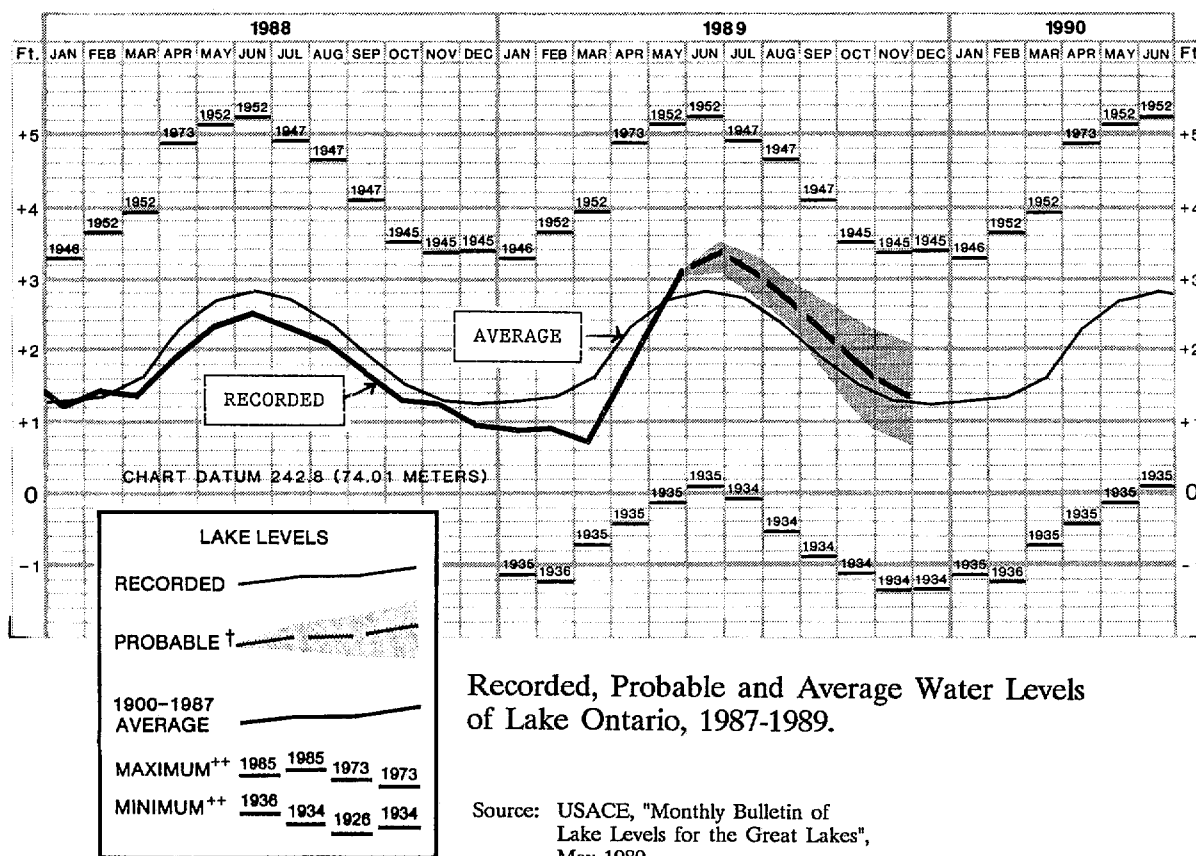


Figure 13: Lake Ontario Water Levels.

## CHAPTER TWO:

# CURRENT ROLES AND RESPONSIBILITIES FOR RESOURCE MANAGEMENT

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*A number of government agencies at the federal, State, county and town levels have some responsibility for, or impact on, activities within or affecting the eastern Lake Ontario coastal barrier system. In addition, several conservation groups are also concerned with resource management in the barrier system.*

*An understanding of the roles and responsibilities of these agencies and groups is important because the identification of opportunities for improved and coordinated resource management must be based on awareness of how these different agencies and groups currently contribute to resource management.*

*While this chapter summarizes the roles, responsibilities and jurisdictions of the key agencies and groups (current roles and responsibilities are summarized in Figure 14), a more detailed description of this institutional framework for resource management may be obtained from the New York State Department of State's Division of Coastal Resources and Waterfront Revitalization.*

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KEY AGENCIES AND ORGANIZATIONS	CURRENT ROLES AND RESPONSIBILITIES IN THE COASTAL BARRIER SYTEM									
	Review Development Projects	Issue Development Permits	Establish Regulations	Enforce Regulations	Planning/Technical Assistance	Land Ownership/Management	Resource Assessments/Studies	Special Projects	Public Information/Education	Conservation Advocacy
Federal Agencies										
U.S. Army Corps of Engineers	•	•	•	•			•	•		
U.S. Fish and Wildlife Service	•						•			
State Agencies										
Department of Environmental Conservation	•	•	•	•		•	•	•		•
Department of State: Div. of Coastal Resources and Waterfront Revitalization	•				•		•	•	•	•
Office of Parks, Recreation and Historic Preservation			•	•		•		•		
St. Lawrence-Eastern Ontario Commission	•				•		•	•	•	•
Sea Grant Extension					•			•	•	
County Agencies										
County Planning Departments					•				•	
Soil and Water Conservation Districts					•			•		•
Environmental Management Councils					•		•	•	•	•
Oswego County Health Dept.	•									
Town Boards and Departments										
Town of Richland	•	•	•	•						
Town of Sandy Creek	•	•	•	•						
Town of Ellisburg	•	•	•	•						
Conservation Organizations										
The Ontario Dune Coalition								•	•	•
Onondaga Audubon Society										•
The Nature Conservancy			•			•				•
Save Oswego County										•

Figure 14: Summary of Roles and Responsibilities for Resource Management.

## FEDERAL AGENCIES

The two federal agencies with the most active roles and responsibilities regarding resource management in the eastern Lake Ontario coastal barrier system are the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service. Other federal agencies also exercise authorities that affect resource management less directly.

### U.S. Army Corps of Engineers

The eastern Lake Ontario region is within the jurisdiction of the Buffalo District of the Corps of Engineers, with headquarters located in Buffalo, New York.

The Corps regulates structures in, or affecting, navigable waters of the U.S. as well as excavation or deposition of materials in navigable waters. The Corps is also responsible for evaluating applications for Department of the Army permits to deposit dredged and/or fill material into waters of the U.S., including adjacent wetlands. These regulatory programs do not directly address the upland portions and sand dune formations within the barrier system but instead focus on the aquatic habitat and wetland areas within the system.

In general a permit must be received from the Corps for: filling of wetlands and navigable waters; placement of structures in navigable waters; and dredging and disposal of dredged material.

The Corps is also responsible for Federal navigation projects (e.g., channels, jetties, anchorages) specifically authorized by Acts of Congress. The only federal navigation project affecting the eastern Lake Ontario barrier system is the Port Ontario Harbor of Refuge Project at the mouth of the Salmon River. (See Chapter Six.) The Corps funded the major portion of this project and is responsible for maintaining it.

Under the Corps' authority to assist communities in small navigation improvements, the Corps has conducted an initial appraisal of the feasibility of establishing a dredged channel to provide improved navigation access between North Sandy Pond and

Lake Ontario. (See Chapter Four.)

The Corps' Detroit District provides monthly bulletins on Great Lakes water levels, including information on long term lake levels and forecasts of levels for the next six months.

### U.S. Fish and Wildlife Service

The Fish and Wildlife Service (FWS) is the principal federal agency involved in reviewing and commenting on permit applications to the Corps of Engineers. The FWS's Cortland, New York field office considers and comments on impacts to wildlife and marine resources resulting from proposed development projects requiring a Corps permit. If the FWS determines that the proposed development action will cause an adverse habitat loss, it recommends mitigation measures to avoid, or minimize and compensate for, such adverse loss. The barrier system has been judged by the FWS to contain especially important waterfowl habitat, and the North Atlantic Waterfowl Management Council (of which the FWS is a major participant) is currently evaluating the significance of this habitat in the eastern Lake Ontario region.

### Other Federal Agencies

Several other federal agencies exercise roles and responsibilities that indirectly affect or could affect resource management in the barrier system. The Department of the Interior is responsible for implementing the Coastal Barrier Resources Act of 1982 (currently the nation's coastal barrier resource system includes undeveloped coastal barriers along only the Atlantic and Gulf coasts, although portions of the eastern Lake Ontario barrier system have been recommended for inclusion). The National Park Service, within the Department of the Interior, administers the National Natural Landmarks Program which includes the Lakeview Wildlife Management Area. The Environmental Protection Agency is concerned with maintaining water quality values and protecting wetlands and comments on applications for dredging and filling submitted to the Corps of Engineers. The Federal Emergency Management Agency administers the National Flood Insurance Program. The National Oceanic and Atmospheric

Administration administers the federal Coastal Zone Management Program under which the New York State Coastal Management Program is authorized. The International Joint Commission oversees regulation of the outflow of Lake Ontario through the St. Lawrence River.

## STATE AGENCIES

The key State agencies with roles and responsibilities affecting resource management in the coastal barrier system are: the Department of Environmental Conservation; Department of State; Office of Parks, Recreation and Historic Preservation; St. Lawrence-Eastern Ontario Commission; and New York Sea Grant Program. Other State agencies also exercise authorities that affect resource management less directly.

### Department of Environmental Conservation

The Department of Environmental Conservation (DEC) has both resource management and regulatory responsibilities in the coastal barrier system. Management responsibilities are directed toward managing fish and wildlife resources and focus on the three wildlife management areas found in the barrier system. Regulatory responsibilities include permit authority over activities affecting freshwater wetlands and navigable waters, authority for protecting water quality and coastal erosion hazard areas and various other authorities.

DEC's central office in Albany establishes statewide policies and regulations and provides technical assistance to the regional DEC offices. Two regional offices exercise authority in the eastern Ontario region: Region 6, headquartered in Watertown, has jurisdiction within that part of the barrier system located in Jefferson County; and Region 7, headquartered in Liverpool, has jurisdiction within the Oswego County portion of the area.

### DEC Resource Management Responsibilities

The three wildlife management areas in the eastern Lake Ontario barrier system are Black Pond and Lakeview in Jefferson County (managed by DEC

Region 6) and Deer Creek in Oswego County (managed by DEC Region 7). Responsibility for managing these areas rests with the DEC Division of Fish and Wildlife in each regional office. DEC conservation officers responsible for enforcing management rules and regulations are within the Division of Law Enforcement.

General wildlife management rules and regulations are established by DEC to apply to all wildlife management areas. In addition, special rules and regulations have been established for some areas, particularly those with significant waterfowl habitat and wetland areas.

### DEC Regulatory Authorities

The DEC has the major responsibility for protecting natural resources in the coastal area of New York State, and exercises this responsibility through various permitting, review and management programs. For example, DEC reviews proposed development activities with the potential for significant environmental impact in accordance with the requirements of the State Environmental Quality Review Act (SEQRA), the requirements of the Freshwater Wetlands Act, the Stream Protection Act, the State Pollutant Discharge Elimination System and the Coastal Erosion Hazards Area Act. In addition, DEC implements the Environmental Quality Bond Act. These State programs are summarized below.

SEQRA establishes a comprehensive review process that is applicable to all actions of State and local agencies and private interests which may have significant effects upon the environment. Development proposals that activate the SEQRA process are specified in the Act and range from permit applications to the DEC for work in freshwater wetlands to applications to town boards for zoning variances. Under SEQRA, local governments and State agencies can designate "critical environmental areas" within which all development proposals automatically receive detailed review under the Act.

The State's Freshwater Wetlands Act authorizes regulation of the use and development of the State's freshwater wetlands. Under this Act, any activity

which substantially impairs any of the several functions and benefits of freshwater wetlands (as specified in the law) are subject to regulation. DEC regulations set forth a system by which wetlands are mapped and classified according to the various functions and benefits provided. Four wetland classifications are established depending on the importance of the wetland cover types. Class 1 wetlands are of the highest value.

Under New York's Stream Protection Act, which was enacted to minimize disturbances to the beds and banks of certain streams, DEC regulates dredging and filling in navigable waters and adjacent wetlands and construction of certain dams and docks.

Under the State's Classification of Waters Program and pursuant to the federal Clean Water Act, New York has classified its coastal waters and rivers, streams, lakes and ponds according to considerations of best usage and has adopted water quality standards for each class of waters. The classifications are used by the DEC in issuing permits to industrial and commercial uses for effluent discharge into surface waters and range from AA (the highest classification) to D (the lowest).

New York State water quality classifications for fresh surface waters and best uses associated with each classification are as follows:

- AA Source of water supply for drinking, culinary or food processing purposes and any other usages.
- A Source of water supply for drinking, culinary or food processing purposes and any other uses with treatment.
- B Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.
- C Suitable for fishing and all other uses except as a source of water supply for drinking, culinary or food processing purposes.
- D Suitable for secondary contact recreation but will not support the propagation of fish.

Under the State Pollutant Discharge Elimination System (SPDES), the DEC regulates all industrial, commercial and municipal discharges as well as those from residential subdivisions of five or more lots into the State's surface and ground waters.

The State's Coastal Erosion Hazard Areas Act empowers the DEC to identify and map coastal erosion hazard areas and to adopt regulations to control certain activities and development in these areas. Within these areas, the construction or placement of a structure, or any action or use of land which materially alters the condition of land require an erosion area permit granted by the DEC, or county or local government, whichever has assumed jurisdiction. Coastal erosion hazard areas include: "Structural hazard areas" which are receding at an average rate of one foot or more per year; and "natural protective feature areas" which include beaches, dunes, sandbars, spits, shoals, barrier bays, barrier islands, bluffs and wetlands. Within the eastern Lake Ontario barrier system, mapped erosion hazard areas are all classified as "natural protective feature areas".

In addition to its regulatory powers, the DEC is empowered to acquire property for any of the functions of the Department. The Environmental Quality Bond Act directs the DEC to appropriate monies raised under this Act for land preservation and improvement projects, including acquisition of important tidal and freshwater wetlands.

### Department of State

The Department of State (DOS), through its Division of Coastal Resources and Waterfront Revitalization, administers the New York Coastal Management Program (CMP) and coordinates activities essential to the Program's implementation. Authority for the New York CMP was established by the State Waterfront Revitalization and Coastal Resources Act of 1981 which enables the State to manage its coastal resources pursuant to the provisions of the federal Coastal Zone Management Act. The CMP covers the shores of lakes Erie and Ontario, the Niagara and St. Lawrence rivers, the tidal portion of the Hudson River, New York City, Long Island and Westchester County.

The CMP establishes 44 management policies to carry out the legislative intent that a balance be established between economic development and coastal resource protection in the State's coastal area. Under the CMP, each coastal area municipality may

prepare a Local Waterfront Revitalization Program (LWRP) based on local needs and objectives for promoting beneficial waterfront development balanced with resource protection in accordance with the State CMP policies.

Pursuant to its responsibilities for administering the CMP, the major roles of the DOS pertinent to resource management in the eastern Lake Ontario coastal barrier system include review of proposed development activities for consistency with the CMP, designation of special resource areas and provision of special planning and funding assistance.

### Protection of Coastal Resources through Consistency Review

All major actions proposed in the coastal area of New York State by federal agencies or by entities requiring federal permits (from the Corps of Engineers, for example) must be consistent with the management policies established in the CMP. The DOS evaluates the consistency of federal activities with the policies set forth in the CMP. If a proposed action is judged inconsistent by DOS, a permit can not be issued.

In addition to federal activities, State agency activities are also required to be consistent with the Coastal Program. Each State agency that proposes to permit, fund or directly undertake an action in the coastal area must determine the consistency of its action with the policies and purposes of the CMP.

### Special Area Designations

The DOS is responsible for assuring the protection of coastal fish and wildlife habitats, scenic areas and agricultural lands of statewide significance. Once areas are designated, the coastal management consistency requirements can be used to protect these resources.

Significant Coastal Fish and Wildlife Habitats may be designated by the State if the habitat is: a) essential to the survival of a large portion of a particular fish or wildlife population; b) supports populations of species which are endangered, threatened or of special concern; c) supports

populations having significant commercial, recreational or educational value; or d) exemplifies a habitat type which is not commonly found in the State or in a coastal region. The significance of certain habitats increases to the extent they could not be replaced if destroyed.

The eastern Lake Ontario coastal barrier system includes portions of four designated Significant Coastal Fish and Wildlife Habitats: Black Pond, Lakeview Marsh, North and South Sandy Ponds and Deer Creek Marsh. In addition, several other areas that are integral to but outside of the barrier system proper are designated habitats: the Salmon River to the south and the Sandy Pond tributaries—the several streams feeding freshwater to the barrier system's embayments and wetlands. (See Chapters Three through Six.)

In addition to the Significant Habitat Program, the DOS has recently started a program to identify, evaluate and recommend areas for designation as Scenic Areas of Statewide Significance.

### Special Interest in the Eastern Lake Ontario Coastal Barrier System

The uniqueness of the eastern Lake Ontario barrier system became particularly evident during the identification phase of the DOS's Significant Habitat Program. The barrier system contains one of the highest concentrations of designated habitats as well as some of the highest valued habitats in the State.

Because of this uniqueness, and because of DOS's concern that the habitats could be adversely affected by damage to the coastal barriers protecting them, DOS initiated and funded a special study (summarized by this report) of the eastern Lake Ontario barrier system. Prior to this project, the overall barrier system had received relatively little recognition or protection under local or State programs, and coordinated management on the part of public and private landowners was lacking.

### Office of Parks, Recreation and Historic Preservation

The main responsibility of the Office of Parks,

Recreation and Historic Preservation (OPRHP) is to operate and maintain a statewide system of parks and historic sites and to meet the recreational needs of the people of the State. The State Parks and Recreation Law authorizes the OPRHP to acquire, establish, operate and maintain State Parks, parkways, historic sites and State recreational facilities. The Parks and Recreation Bond Act has provided a source of funds for such acquisition.

The OPRHP establishes rules and regulations for State park use, including rules and regulations for Southwick Beach State Park—the one State Park located within the barrier system. These rules and regulations are implemented by regional commissions. Southwick Beach State Park is within the jurisdiction of the Thousand Islands State Park's Recreation and Historic Preservation Commission which is directly responsible for its management and operation. Selkirk Shores State Park, located near the southern boundary of the barrier system, is within the jurisdiction of the Central New York State Park, Recreation and Historic Preservation Commission.

The OPRHP is also responsible for administration of the State's Navigation Law. The OPRHP's Bureau of Marine and Recreational Vehicles has general responsibility for boating safety in New York State and provides funding and training for marine law enforcement as well as boating education programs. Also, under the State's Navigation Law and Town Law, no local law or ordinance pertaining to the regulation of vessels and/or the establishment of a vessel regulation zone can take effect until it has been submitted to and approved by the Commissioner of Parks, Recreation and Historic Preservation. The OPRHP maintains the aids to navigation that currently mark the existing channel between North Sandy Pond and Lake Ontario.

### **St. Lawrence-Eastern Ontario Commission**

The St. Lawrence-Eastern Ontario Commission (SLEOC) is a coastal management agency created as an executive agency of the State of New York in 1974. SLEOC's service area includes approximately 776 miles of shoreline along the eastern shoreline of Lake Ontario and the St. Lawrence River. SLEOC is legislatively charged with providing technical and

land and water use planning assistance to the 45 municipalities within its service area, promoting economic development (principally through the tourism sector) and protecting the area's environmental quality (principally through review of development proposals).

SLEOC has been especially concerned with proper resource management in the eastern Lake Ontario barrier system and has conducted studies of the natural values provided by the system. SLEOC has also participated in special projects and studies addressing the barrier system, including the sand dune and wetland areas.

SLEOC also addresses the barrier system through its project review process. Under authority of Article 37 of the State Executive Law, SLEOC has promulgated its own Rules and Regulations for Project Review for activities within its jurisdictional area. Although SLEOC's project review process is mandatory for specific types of projects, the process does not impose additional regulations on a project applicant. The Commission does not issue or deny development permits. Through the project review process, SLEOC works with project sponsors as necessary to reach mutually acceptable compromises in design, location and other aspects of a proposal in order to accomplish resource management and development objectives.

### **New York Sea Grant Program**

The New York State Sea Grant Extension Program at the State University of New York at Oswego is established under the National Sea Grant Program which supplies funds to state institutions for marine research, education and advisory services. The program also receives operating funds from the State of New York. Program goals include the conservation, proper management and balanced use of marine resources. Toward this end, the NYS Sea Grant Extension Program has been involved, through research, information exchange and public education programs, with a variety of issues regarding resource management within the eastern Lake Ontario coastal barrier system. Some issues of concern to the local Sea Grant Extension include the status and effects of lake levels, sand dune stabilization and erosion



control.

### Other State Agencies

Other State agencies also exercise roles and responsibilities that affect resource management in the barrier system. These include the Office of General Services (OGS) which is the proprietor of State lands, including lands underwater. Under the Public Lands Law, private uses of submerged lands within the public domain (including those generally below Mean Low Water in Lake Ontario) require a grant, easement or lease from OGS. Although the State may also hold title to submerged lands in smaller bodies of water, it does not claim title to underwater lands in the North and South Sandy Ponds.

The New York State Department of Health and the Department of State's Codes Division have roles with regard to authorizing development in the barrier system. The Department of Health enforces the Public Health Laws and the State Sanitary Code and regulates and licenses restaurants, motels, campgrounds and other specific activities. The Department of Health must also approve water and sewerage provisions for commercial uses and real estate subdivisions.

The DOS Codes Division administers the State's Uniform Fire Prevention and Building Code. While local building codes may also be established, local codes must meet the minimum requirements of the State code. In communities where no local code is in place, the State assumes this responsibility and issues permits and certificates of occupancy for all construction.

The New York Natural Heritage Program, established with funding provided by The Nature Conservancy and currently operated by both The Nature Conservancy and DEC, is indirectly involved with resource management in the barrier system. Major purposes of the Natural Heritage Program include an inventory of rare plant and animal species and communities in the State, developing a data base on these species and communities and providing this information to interested parties. In conducting the Statewide inventory, the Natural Heritage Program applies a standardized methodology developed by

The Nature Conservancy for ranking species and communities. This methodology has been applied in the eastern Lake Ontario region, and the dune community within the barrier system has generally been highly ranked.

### COUNTY AGENCIES

The barrier system is included in parts of Oswego and Jefferson Counties. County-based agencies with roles and responsibilities affecting resource management in the barrier system include the planning departments and soil and water conservation districts in each county as well as the Oswego and Jefferson County Environmental Management Councils and the Oswego County Health Department.

#### County Planning Departments

County planning departments have been established in both Oswego and Jefferson counties. The primary function of these departments is to provide technical assistance on planning and development matters to local governments. For example, the county planning departments offer assistance, upon request, to local governments relative to the formulation and enactment of local land use controls such as zoning regulations, sub-division regulations and special ordinances. The planning departments also provide assistance to local governments with regard to State and federal regulatory programs.

County land use plans have been developed for both Oswego and Jefferson counties. Both plans examine socio-economic conditions, land use and land capability characteristics and present land use policies, goals, objectives and implementation strategies. Neither plan specifically addresses the eastern Lake Ontario coastal barrier system.

The county planning departments could also administer the State's Coastal Erosion Hazard Areas Act within those towns that decline to administer the Act locally. Should the counties also decline to administer the Act, then the DEC would do so.

### County Soil and Water Conservation Districts

County Soil and Water Conservation Districts (SWCDs) have been established in both Oswego and Jefferson counties. The primary objectives of the SWCDs is the protection of natural resources in each county, specifically the protection of soil and water resources and the agricultural resources dependent on soil and water.

With regard to the eastern Lake Ontario coastal barrier system, the principal involvement of each district has been the provision of technical assistance to concerned landowners regarding the establishment of appropriate erosion control measures.

### County Environmental Management Councils

The Oswego and Jefferson County Environmental Management Councils (EMCs) are county-authorized citizen advisory boards. Their primary functions are to advise citizens and local government officials on matters affecting the management of each county's natural resources.

The Oswego County EMC provides resource information and technical assistance to local officials and County residents, conducts educational programs and special environmental projects and studies and also helps local governments understand and comply with the requirements of State and federal environmental legislation. The Council participates in the review of development activities proposed within Oswego County and provides comments on potential environmental impacts. The Council also provides informational materials to citizens and local officials to promote greater awareness of the value of the County's environmental resources and the importance of resource management. The Council mapped Oswego County wetlands subject to the State Freshwater Wetlands Act and, in cooperation with the County Planning Department, has completed natural resource inventories for most of the towns in Oswego County. The EMC at the request of County, town or village officials reviews subdivision and development proposals to identify sensitive resources and potential environmental impacts.

The Jefferson County EMC has recently been established with the same authorities and responsibilities as the Oswego County EMC.

### Oswego County Health Department

The Oswego County Health Department conducts inspections of sewerage facilities for conformance with standards established by the State Department of Health. Within the eastern Lake Ontario coastal barrier system these inspections are carried out for all new commercial development and for seasonal residential development in the towns of Richland and Sandy Creek.

The County Health Department inspects existing facilities only when it receives a complaint that a facility is not functioning properly.

(There is no County health department in Jefferson County, and the New York State Department of Health enforces the public health laws in Jefferson County.)

## TOWN BOARDS AND DEPARTMENTS

The barrier system is located within the jurisdiction of three towns: Richland and Sandy Creek in Oswego County; and Ellisburg in Jefferson County. (See Figure 15.) In each town, the principal executive and legislative body is the town board. The town boards are responsible for the general management and control of town finances and have power to acquire land for any public purpose. The town boards may also enact, amend and repeal various ordinances, rules and regulations, including a building code, vessel regulations and zoning and subdivision regulations.

### Town of Richland

The Town has about 7 miles of Lake Ontario shoreline of which about 2.6 miles is north of the Salmon River and within the eastern Lake Ontario barrier system. Of this barrier shoreline, a little less than 2 miles is in private ownership and the rest is State-owned.

The Town has a Planning Board and has adopted zoning regulations. The Town's shorefront is now zoned "residential/cottage" and "residential/recreation". The "residential/cottage" district applies to the shorefront from Rainbow Shores Road south to the Deer Creek Wildlife Management Area as well as to the area between Brennan Beach and the Salmon River. (See Chapter Six.) This district permits 1 or 2 family homes and other uses such as motels/campsites by special permit. The less restrictive "residential/recreation" district applies to the Brennan Beach commercial campground area and permits such uses as 1 and 2 family dwellings, marinas, camps, docks and many other uses by special permit.

The Planning Board acts on special permit requests. There is an Appeals Board but the zoning regulations give the Planning Board final authority on judging the consistency of a development project with the zoning regulations.

The Town has adopted mobile home regulations, but there is no local building code; the State code is used and enforced by the State. There is no local sanitary code; State guidelines are relied on and the Oswego County Health Department carries out the needed inspections for commercial facilities (and for residential facilities when complaints are received). The Planning Board, however, can put special conditions on the permits granted by the County Health Department such as stipulations on the size of holding tanks.

The Town has a zoning enforcement officer and is considering hiring an additional officer in response to growth pressure in the Port Ontario harbor area. There is no municipal sewage system in place now, and the Town is conducting a study to determine the feasibility of implementing a special sewer and water district in the port area.

Although no critical environmental area has been designated in the Town under the SEQR Act, there is some thought that such an area would be appropriate for designation around the harbor area.

The Town has not indicated a desire to develop local regulations to implement the State Coastal Erosion Hazard Areas Act.

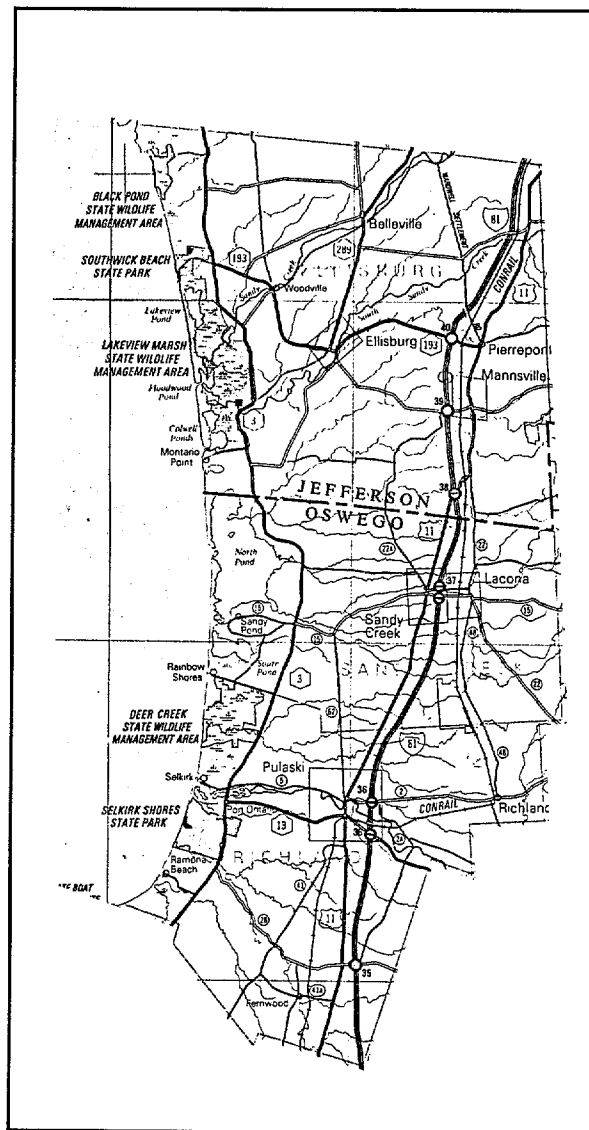


Figure 15: Towns of Ellisburg, Sandy Creek, and Richland.

### Town of Sandy Creek

The Town agency currently most involved with resource management in the barrier system is the Sandy Creek Regional Planning Board. Appointed by the Town Board, the Planning Board is concerned with development and conservation issues, particularly in response to accelerated growth pressures caused in part by expansion of recreational fishing activities. Proposals for trailer parks and recreational vehicle (RV) camps have been of

particular concern in recent years.

There are no Town zoning or subdivision regulations, and as a result, pressures for subdivision, associated in part with increasing development of second homes, are also of concern. Zoning has been an emotional issue, and some residents have been traditionally opposed to increased local land use controls. Several years ago, the Planning Board initiated efforts to develop local zoning and land use requirements but these were not accepted by the Town Board. The Planning Board is currently in the process of preparing a Town Master Plan and there is growing local support for the development of Town-wide zoning regulations.

The Planning Board reports to the Town Board and provides information to the Town Board regarding State programs and requirements. The Planning Board, for example, reviewed the purposes and requirements of the State Coastal Erosion Hazard Areas Act with the Town Board. The Town, however, has recently indicated that it does not, at this time, intend to assume local responsibility for administering the Coastal Erosion Hazard Areas Act.

That portion of the barrier system located within the Town of Sandy Creek contains no publicly owned shorefront. (There are no wildlife management areas or State parks in the barrier system in the Town of Sandy Creek.) The Town has about 5 miles of lakefront shoreline, all within the eastern Lake Ontario barrier system. The barrier within the Town includes the largest sections of currently undeveloped land (on the north and south spits of North Sandy Pond; see Chapter Five). The remainder of the barrier beach is developed with mostly seasonal homes and includes a small commercial beach area.

The Town has adopted a sanitary code and a Town enforcement officer is responsible for ensuring compliance with this code. Other local ordinances are floodplain regulations and a mobile home ordinance that addresses individual mobile homes as well as trailer parks and RV parks. The building code used is the State building code.

Under the State Environmental Quality Review Act, the Town has designated all of the area west of Route 3 as a "critical environmental area". The

critical environmental area includes the barrier system and the North and South Sandy Ponds. As a result of this designation, any private or government (local, State or federal) development proposal within this area is automatically a "Type 1" action under SEQRA and will receive closer review.

The Town Board has recently appointed a special committee—the Sandy Pond Resource Management Committee—and charged this committee with overseeing a special study of the North and South Sandy Pond area intended to result in recommendations for resource use and management in this area.

### Town of Ellisburg

The Town's Lake Ontario shoreline extends for approximately 10 miles from the northern edge of North Sandy Pond to just north of El Dorado beach. With the exception of the northernmost 3/4 mile, the Town's shoreline is within the barrier system. Much of this barrier shoreline, however, is outside of Town jurisdiction (i.e., the State-owned Southwick Beach State Park and Lakeview Wildlife Management Area). Slightly less than 3 miles of shoreline is privately owned and is virtually fully developed with mostly seasonal homes.

The Town Board acts as the Planning Board. Town zoning regulations are in effect and enforced by a Zoning Enforcement Officer. All land west of Route 3 is zoned "resort/residential". There is a separate Board of Appeals. No critical environmental area has been designated within Town boundaries.

There is no local sanitary code but septic tank inspections (for conformance with the State sanitary code) are carried out by the Zoning Enforcement Officer as there is no County Health Department in Jefferson County. The New York State Building and Fire Code is enforced by a private firm contracted by the County to carry out building inspections. The Town will assume local responsibility for implementing the State Coastal Erosion Hazard Areas Act. Proposed local regulations for implementing this Act have not yet been adopted by the Town.

## CONSERVATION GROUPS

In addition to the various federal, State, county and local agencies with roles and responsibilities affecting resource management in the barrier system, several non-profit organizations and other private groups have active roles or concerns with regard to management of the system. These organizations and groups include the Ontario Dune Coalition, the Onondaga Audubon Society Chapter, The Nature Conservancy and Save Oswego County.

### The Ontario Dune Coalition

The Ontario Dune Coalition (TODC) consists of members from 20 public and private agencies and organizations working toward the protection and optimum public and private use of the sand dunes in the eastern Lake Ontario barrier system. Of all the organizations concerned with sand dune management in the region, TODC has been the most instrumental in developing public awareness, obtaining agency commitments and establishing public and private coordination relative to resource protection.

Representatives of town, county, State and federal government agencies as well as non-profit organizations and private landowner associations, serve on the Coalition without any official authority or funding.

Goals of the coalition include: a) assisting in the stabilization of the sand dunes as natural systems; b) developing measures to maintain dune stability; and c) achieving optimum public use of the dune system consistent with private property considerations and dune protection and restoration objectives. TODC activities include:

- Planning and initiating the dune walkover project constructed in the Lakeview Wildlife Management Area. (See Chapter Four.)
- Sponsorship of "Sand Dune Appreciation Day", an annual event held each of the past three years for the purpose of increasing public awareness of the natural values provided by the dune system and to provide information on a variety of topics

relating to the system.

- Preparing educational material (including a TODC newsletter) and disseminating public information on the significance of the dune system.
- Providing information to member organizations and property owners of the status of, and potential hazards associated with, high lake levels, as well as information regarding appropriate shore protection measures.
- Providing forums for the exchange of information, insights and opinions among its members and others.
- Sponsoring a "dune naturalist intern" to gather data pertaining to sand dune management and to help promote public awareness of management concerns.

The TODC has established four standing committees to address issues of concern with regard to resource management in the dunes. These committees address educational, technical and legislative matters as well as private landowner concerns. The Snow Memorial Library in Pulaski, New York serves as a repository of information assembled by TODC on the eastern Lake Ontario sand dunes.

### Onondaga Audubon Society

The Onondaga Audubon Society (OAS), a chapter of the National Audubon Society, has members throughout Onondaga, Oswego and Jefferson Counties and is organized through a volunteer Board of Directors. Although the National Audubon Society has not exhibited a special interest in the eastern Lake Ontario barrier system, the OAS has expressed concern with regard to current and future impacts on bird species and habitat in the barrier system. Whereas The Nature Conservancy (see following page) is concerned primarily with rare avian species, the OAS is concerned with all bird species, including the more common species for which the barrier system provides habitat. Through its members and board of directors, the OAS has previously stressed the need for cohesive management policies to be

applied to State wildlife management areas to protect avian species and habitat in central New York State.

### **The Nature Conservancy**

The Nature Conservancy (TNC) is a national conservation organization committed to the preservation of natural diversity by protecting lands and waters supporting the best examples of all types of natural environments. A membership organization, TNC is a nonprofit, tax-exempt corporation.

The Nature Conservancy's interest in the eastern Lake Ontario barrier system extends beyond its ownership and management of its El Dorado Beach nature preserve. (See Chapter Three.) TNC is also concerned with the protection of rare natural communities and species as well as biological diversity throughout the barrier system.

With regard to management of TNC lands, standard rules applying to all TNC lands are developed by the Conservancy's National Board of Governors. TNC preserves fall into three major categories: the first is open to the public for permitted purposes such as bird-watching, photography and hiking; the second is open to the public for permitted purposes but users are required to obtain specific permission before using the preserves; and the third type is closed to the public because of resource sensitivity to human disturbance. The El Dorado Beach Preserve is currently managed as the first type of preserve: open to the public for permitted purposes.

Specific management decisions and policies regarding the El Dorado Beach Preserve are developed by the volunteer Board of Directors of the Central New York Chapter of The Nature Conservancy and by the Conservancy's Central and Western New York Field Office located in Rochester, New York.

### **Save Oswego County**

Save Oswego County is an advocacy group for environmental conservation that also acts as a land trust. The organization, for example, owns a portion of the Snake Creek Swamp in Oswego County and has been deeded title to other properties as well.

The organization does not own any property in the eastern Lake Ontario barrier system. The organization has about 30 members and conducts outings and educational programs to increase public awareness of environmental matters and promote environmental management. There is a volunteer Board of Directors.

## CHAPTER THREE:

# BLACK POND RESOURCE AREA

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*The Black Pond Resource Area contains 2.75 miles of barrier beach as well as the northern-most of the coastal wetlands protected by the eastern Lake Ontario coastal barrier system.*

*This chapter provides a review of existing conditions and management concerns in the resource area, and also presents some guidelines and recommendations for resource management. Three "management units" are identified to include:*

- *The coastal barrier within The Nature Conservancy's El Dorado Beach preserve;*
  - *The coastal barrier portion of the State's Black Pond Wildlife Management Area; and*
  - *The residential area located to the south of the Black Pond WMA.*
- 



El Dorado Beach, Black Pond, Sand Dunes in The Nature Conservancy's Preserve and the Black Pond WMA Looking Toward the Southeast.

## EXISTING CONDITIONS IN THE BLACK POND RESOURCE AREA

The Black Pond Resource Area (see Figure 16) is distinguished by the large size and ecological diversity of the wetland habitat protected by the coastal barrier and by the absence of development and relative lack of human disturbance in its northern section. Land bordering the north, east and south sides of the resource area includes upland forest, abandoned fields, active agricultural lands and public park land.

The undeveloped barrier beach in the northern part of this resource area is approximately one mile in length and falls within the El Dorado Beach Preserve, owned and managed by The Nature Conservancy (TNC), and within the Black Pond Wildlife Management Area under the management of the New York State Department of Environmental Conservation (DEC). This natural barrier contains well-developed sand dune formations including one of the four "high dune" areas found in the eastern Lake Ontario barrier system. There have been some human disturbances along the undeveloped barrier. These have been caused primarily by uncontrolled recreational activities, including occasional use of unauthorized all-terrain vehicles (ATVs).

South of the undeveloped barrier beach, much of the natural barrier environment (including historic sand dune formations) has been modified by the development of lakefront cottages and by the human activities associated with these cottages. This developed section extends southward approximately 1.75 miles from the wildlife management area to Southwick Beach State Park.

The Nature Conservancy's El Dorado Beach Preserve and the Black Pond Wildlife Management Area (along with some privately owned lands) have been designated by the New York Department of State as a Significant Coastal Fish and Wildlife Habitat encompassing some 750 acres. This habitat area includes the coastal barrier as well as the wetland behind the barrier. This wetland, approximately 378 acres and consisting primarily of scrub-shrub and forest vegetation, is classified as a

Class 1 wetland under the State's Freshwater Wetlands Act. (Under DEC regulations, "Class I wetlands provide the most critical of the State's wetland benefits, reduction of which is acceptable only in the most unusual circumstances. A permit shall be issued only if it is determined that the proposed activity satisfies a compelling economic or social need that clearly and substantially outweighs the loss of or detriment to the benefits of the Class I wetlands.")

The aquatic habitat, sheltered from Lake Ontario by the coastal barrier, supports a variety of wetland wildlife species, including such breeding bird species as mallard, wood duck, turkey vulture, black tern, belted kingfisher, marsh wren, common yellowthroat, red-winged blackbird and swamp sparrow. Other possible nesting birds in the area include green-backed heron, black duck, blue-winged teal, American bittern, least bittern, and northern harrier, although breeding by all of these species has not been documented in recent years.

Perhaps the most significant habitat value provided by the wetlands in this resource area is the support of large concentrations of shorebirds (barrier shoreline and beach areas also provide vital shorebird habitat), waterfowl and wading birds during spring and fall migrations. The Black Pond Resource Area is an important feeding and resting area for hundreds of migrant birds on a daily basis, with the greatest numbers of most species recorded between August and November. The area is well documented as one of the major concentration areas for migratory shore and water birds on Lake Ontario.

This resource area also supports populations of several furbearer species, including muskrat, beaver, raccoon and mink. Other wildlife species occurring in the area include white-tailed deer, snapping turtle, northern water snake, bullfrog and wood frog. Black Pond, the only sizeable body of open water in the resource area, supports a relatively small but significant warmwater fish community. Fish species found in the pond include brown bullhead, northern pike, largemouth bass and carp.

In 1984, a State boat launching facility was built near the mouth of Stony Creek to the north of The Nature Conservancy preserve. (See Figure 16.) This facility



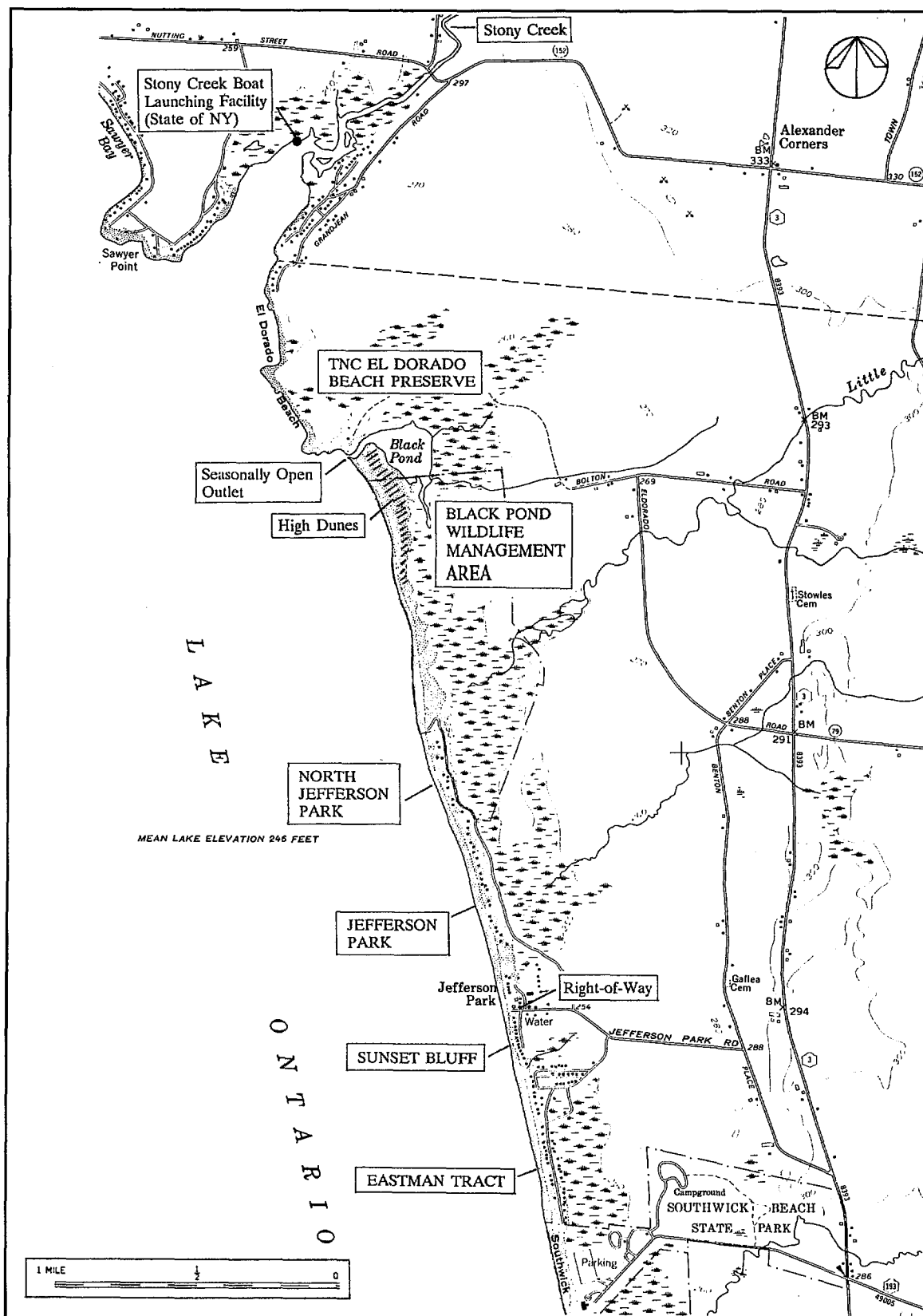


Figure 16: Black Pond Resource Area.

has resulted in increased use of the barrier beach in the preserve and in the Black Pond Wildlife Management Area by those arriving in small boats. Along with the increased use has come increased human disturbance and subsequent management concerns.

The barrier system in the Black Pond Resource Area can be divided into three management units: 1) the barrier within The Nature Conservancy's El Dorado Beach Preserve; 2) the barrier portion of the State Black Pond Wildlife Management Area (WMA); and 3) the residential area south of the Black Pond WMA.

### The El Dorado Beach Preserve

The Nature Conservancy's El Dorado Beach Preserve is located at the northern boundary of the eastern Lake Ontario barrier system. The preserve was acquired by The Nature Conservancy in two parcels: the first parcel (about 250 acres and consisting of a rocky section of shoreline known as El Dorado Beach and the adjacent upland area) was acquired in 1968; the second parcel (of about 95 acres) including the sandy beach, dune area and Black Pond section (see Figure 17 and 18) was

acquired in 1983. All of the land from the existing preserve southward to the North Jefferson Park residential area (including what is now the Black Pond Wildlife Management Area) was formerly owned by a single property owner. An above ground electrical line currently runs along the beach from the North Jefferson Park area to a private trailer home located on a "life-time estate" within the preserve. (The "life-time estate" agreement with The Nature Conservancy allows the trailer's owner to occupy a small site for his lifetime; he does not own any property within the preserve.)

The deed to the preserve property specifies that The Nature Conservancy's ownership extends to the lake's Mean Low Water (MLW) mark. This is an important consideration relative to resource management in the area as the area used by shorebirds, for example, is found between MLW and Mean High Water (MHW).

The preserve is a significant natural area for two main reasons: 1) it provides valuable habitat for migratory and nesting shorebirds (25-30 shorebird species have been observed in the preserve); and 2) it contains a relatively undisturbed and well-protected



Figure 17: Black Pond, Blocked Outlet, Sandy Beach and High Dunes at The Nature Conservancy's El Dorado Beach Preserve.

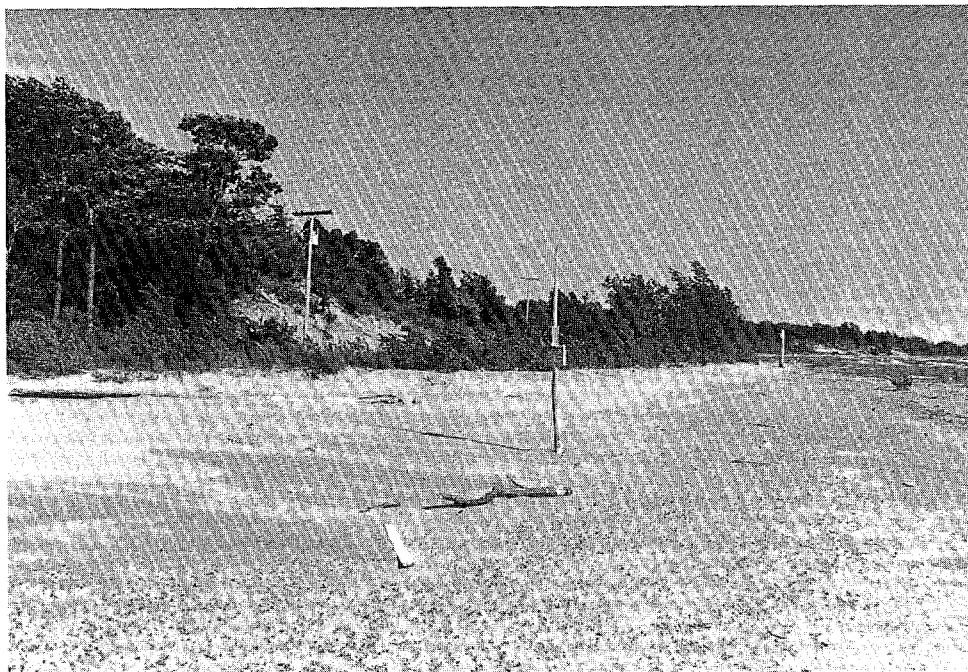


Figure 18: Beach at The Nature Conservancy Preserve South of Black Pond Outlet.

sand dune ecosystem.

Bird watchers and other naturalists visit the preserve but the current use level is not large enough to cause management concerns. As shorebird habitat, the preserve is considered to be a site of special importance within the Lake Ontario basin and northern New York State region. This area historically fell within the breeding epicenter of the northern New York bald eagle population. This breeding area extended from North Sandy Pond (see Chapter Five) northward to the St. Lawrence River. The Piping Plover (like the eagle, another endangered and extremely disturbance-sensitive species) is believed to have formerly nested in the area now contained in the preserve. The Nature Conservancy believes that renesting of both eagles and plovers may be possible here in the future if the preserve's relatively undisturbed and protected environment can be maintained. Nearby residents last observed eagles in the El Dorado area in the 1950s.

The entire preserve contains about 1.25 miles of shoreline (less than 1/4 mile, however, consists of barrier beach). The El Dorado Beach section (north of the barrier beach) is basically a rocky shoreline consisting of shelving limestone bedrock, marking the

northern termination of the barrier beach system. From an aerial perspective, the bedrock can be seen to extend beneath the surface of the water for over 100 yards offshore. In some places, striations in the bedrock clearly illustrate glacial scour.

During the spring and summer, the rocky shoreline is covered with Cladophora algae. This algae provides an important substrate supporting the invertebrate species that are an essential source of food for migrating shore birds. The algae grows in shallow waters over rocky substrates and is washed ashore by winds and waves. In late June, when the shorebirds start their southern migration from their arctic breeding grounds, mats of algae begin to build up on the shore at El Dorado Beach. The birds begin to arrive in early July and the migration continues through October, with the peak migration period falling between mid-July and mid-September. During this entire period, algae piles up on the shelving rock and creates a feeding habitat that is unique on the U.S. side of Lake Ontario and provides an essential fueling station along the birds' long migration route.

In recent years, increasing quantities of sand have accreted on the rocky shoreline in the El Dorado

Beach section of the preserve. The cause of this buildup is unclear and the effect it may have on algae growth in the area, and therefore on shorebird habitat, is also unclear but of concern to The Nature Conservancy. In the past three years, cobbles have also been appearing on the shore in this area. The increased sand deposition and the appearance of cobbles roughly corresponds to the last period of higher lake water levels and may be the result of increased shoreline erosion in the barrier system to the south.

The main sand dune portion of The Nature Conservancy's property begins near the outlet of Black Pond. Black Pond is an approximately 25 acre shallow pond (depths range from 2-6 feet) located at the point on the shoreline that marks the northern boundary of the eastern Lake Ontario coastal barrier system. Little Stony Creek and several unnamed tributaries flow into the pond which opens through a small outlet to Lake Ontario. The outlet is semi-permanent; it typically becomes plugged with sand over the summer when reduced outflow can no longer clear littoral sand deposits. (See Figure 17.) In the spring and fall, flows increase and an outlet of variable width and depth is opened.

Purple loosestrife, a nonindigenous species of vegetation, is spreading rapidly throughout the area surrounding Black Pond and is viewed by The Nature Conservancy as a serious resource management problem due to its displacement of indigenous vegetation and the resulting reduction of valuable wildlife habitat.

The southern-most portion of Black Pond is included in the State's wildlife management area. Some people fish in the pond from the banks of the State land, gaining access to the pond by walking on a traditionally used path through the dunes in The Nature Conservancy preserve (See Figure 16). The Conservancy plans to put up fencing to control access along this path and to protect the adjacent dune areas from damage caused by pedestrian traffic. This path is at the southern boundary of the preserve near the border of the Black Pond WMA. In the 1920s, an outlet of Black Pond may have flowed through this area.

The preserve contains a distinct primary (foredune) and secondary (backdune) dune system, which includes high, well-vegetated secondary dunes that reach a height of some 70 feet above Lake Ontario. The high dunes extend into the wildlife management area and are the best preserved high dunes of any found in the four high dune sections in the eastern Lake Ontario barrier system. The dune system in the preserve is also relatively wide; approximately 200-300 yards.

The Nature Conservancy is pursuing an active resource management program directed at protecting this important dune system. Snowfencing has been employed to help stabilize the existing foredunes and secondary dunes. Some fencing has been placed in the foredune area to help rebuild dune formations in destabilized or blowout areas. In the secondary dunes, trespassing ATVs in the late 1970s caused extensive erosion damage that is still evident on a few steep slopes. These damaged areas graphically illustrate the difficulty of restabilizing steep sloped dunes once the dune vegetation is eroded. (See Figure 19.)

The swale or interdunal area here is well vegetated (see Figure 20), and includes two plant species—sand dune willow and sand cherry—considered rare in the region. The Nature Conservancy is removing non-native species such as scotch pine in order to reestablish as natural an ecological community as possible.

The water quality of Lake Ontario in terms of nearshore sediment load is visibly better in this northern portion of the overall barrier system than it is to the south. The water is much clearer and there is no "brown zone" in which surf-carried sediment can be seen. The State surface water quality classification of Lake Ontario here is "A" while Black Pond is classified as "C".



Figure 19: Snowfencing on an Eroded Dune Face.



Figure 20: Interdunal Area at TNC Preserve.

**Summary of Management Concerns  
in the El Dorado Beach Preserve:**

*Accretion of sand and effect on algae growth at El  
Dorado Beach*

*Spread of non-indigenous vegetation*

*Increased recreational use pressures stemming from  
State's Stony Creek boat launch site*

*Unauthorized recreational use*

*Trespassing ATVs*

*Human disturbance of migrating and nesting bird  
species*

*Human disturbance of sand dune vegetation and  
formations*

*Erosion of "high" dunes*

**The Black Pond Wildlife Management Area**

The Black Pond Wildlife Management Area adjacent to and south of the El Dorado Beach Preserve, was acquired by the State of New York in 1975 and includes barrier beach and dune systems as well as upland and wetland areas behind the barrier. The barrier beach and dune section extends southward to the North Jefferson Park residential area. (See Figure 16.) Part of the wetland portion of the wildlife management area also extends southward and to the east of the residential area.

As noted earlier, the northern portion of the barrier beach system contains a section of high dunes which extend into The Nature Conservancy's preserve. To the south, the dune system becomes lower and progressively less well formed, leading to the North Jefferson Park residential area where cottages have been built close to the edge of the beach in the natural foredune area. It is not readily apparent why the dune system in the southern portion of the wildlife management area is not higher and more

developed. The vegetation is vigorous and there is no evidence of overwash. The lack of higher dunes may be related to past human disturbance and the lack of sand sources sufficient to support dune formation when lake levels were lower than at present. The rocky promontory of El Dorado Beach provides a natural barrier to any northerly littoral transport of sand, and may have caused a larger reservoir of sand favoring high dune formation to build up immediately south of El Dorado Beach.

Recent fluctuations in Lake Ontario water levels were clearly indicated by the berm and drift line that could be seen along sections of the beach in the WMA during the summers of 1987 and 1988. During the summer of 1986 there was no beach in portions of this area. Large amounts of cobbles are found in some beach sections in the northern part of the WMA.

The dunes here are damaged by human use, but not yet to the same extent as the dunes in the Deer Creek Wildlife Management Area (see Chapter Six). During peak use times such as the July 4th weekend, upwards of 100 people have been observed on the beach in the WMA. Picnicking, swimming and other activities are prohibited by DEC regulations, but regularly take place as the area is seldom patrolled by a Conservation Officer. Swimming, in fact, has been a traditional use here since the time the area was privately owned. (The previous owner also owned the land now included in The Nature Conservancy's preserve and the North Jefferson Park residential area. This owner helped develop a cottage community to the north and historically allowed the residents of this community to swim on the beach south of Black Pond in what is now the Black Pond Wildlife Management Area.)

The DEC's Region 6 has established no special rules for management of this area. The DEC's General Wildlife Management Rules and Regulations apply (e.g., no vehicles, boats, camping, etc., are permitted unless otherwise posted).

Access to the wildlife management area is by small boat (from the nearby Stony Creek boat launching facility) as well as by land from the residential area to the south and through the El Dorado Beach preserve to the north. (See Figure 21.) It has been





**Figure 21:** Northern Boundary of Black Pond WMA (Southern Boundary of TNC Preserve) Looking South.

estimated by The Nature Conservancy's land steward that about 20% of those who use the beach at the Black Pond WMA walk to the beach from the residential area, 60-70% arrive by small boat and the remainder walk through the El Dorado Preserve.

As in other parts of the barrier system, the dunes here are popular places for sunbathing and the swale provides a natural picnic area sheltered from the wind. Climbing on the dunes is a popular activity for picnickers here, and erosion caused by human activity is clearly evident. Some of those that arrive by boat are attracted to the high dunes which have exposed sand visible from off-shore.

Several of the higher foredune areas are close to being "notched" at their crests due to the removal of vegetation by pedestrian traffic. (See Figure 22.) These notched crests are particularly vulnerable to erosion accelerated by the "Venturi effect"—a phenomena whereby wind speeds increase when forced through a constricted opening. (Wind speeds are typically higher a short distance above the ground. If, for example, wind speed at beach level is 30 mph, the speed at the crest of the dune may be 35 mph and, if a notch in the top of the dune is present, the Venturi effect can accelerate the wind

speed to 50 mph.)

Additional human impact on the dunes, especially in the southern part of the WMA, has been caused by some cottage residents from the area to the south collecting firewood in the dunes. Also, during the spring and fall of 1984, a significant amount of damage to the wildlife management area was caused by ATVs and four-wheel drive vehicles. These unauthorized vehicles gained access from the residential area to the south. (See Figure 23.) The Nature Conservancy's concern over this traffic contributed to the formation of the Ontario Dune Coalition.



**Figure 22:** Sand Dune Subject to "Notching" and Rapid Erosion Caused by Pedestrian Traffic.



**Figure 23:** Southern Boundary of Black Pond WMA Looking North.



**Summary of Management Concerns  
in the Black Pond WMA:**

*Increased recreational use pressures stemming from  
NYS Stony Creek boat launch site*

*Unauthorized recreational use on the beach and  
in the dune system*

*Trespassing ATVs*

*Lack of enforcement of existing DEC use regulations*

*Lack of a specific plan for the wildlife management  
area*

*Human disturbance of migrating and nesting bird  
species*

*Human disturbance of sand dune vegetation and  
formations*

*Erosion of "high" dunes*

**North Jefferson Park - Jefferson Park - Sunset  
Bluff - Eastman Tract Residential Area**

This management unit actually contains four separate residential neighborhoods between the Black Pond WMA to the north and Southwick Beach State Park to the south. Almost all of the cottages here are used on a seasonal basis. On the eastern or inland side, the area is also bounded by a portion of the wildlife management area. Some residents recall that the Black Pond marsh once drained through the barrier in the area that is now known as North Jefferson Park.

From north to south, the four neighborhoods in this management unit are: North Jefferson Park, Jefferson Park, Sunset Bluff and Eastman Tract. (See Figure 16.) Residents of these neighborhoods can walk along the beach to the wildlife management area to the north and to the State Park to the south.

The first cottages were built in the 1920s in the Jefferson Park area and development has occurred

close to the beach in what was once the foredune area. The cottages are built on small lots typically 50 feet in width. There is no longer any well-formed dune system in this area although embryonic dunes stabilized by beach grass have formed in several locations. (See Figure 24.) The low lake level and resulting wider beach during 1987 and 1988 have favored this dune development. Sand dune willow and sand cherry can be found in several areas.

Residents of the area display different attitudes and awareness regarding shore protection, development and natural resource protection. Some homeowners have allowed dune growth to occur and provide a measure of natural shore protection; others have employed individual structural measures such as rip rap, concrete and stone retaining walls and sand bags in an effort to protect their property against erosion. A relatively large rip rap shore protection project has recently been constructed by one homeowner and the effects of this project on the erosion rates of adjacent properties is of concern to the nearby owners. Some property owners have expressed an interest in learning more about available measures for controlling erosion.

Some residents drive through their property to the beach in order to launch small boats. In some instances, gravel placed on driveways has washed onto the beach and into the lake. The sharp edges on these stones allow this material to be easily distinguished from the rounded cobbles washed by the lake.

A Town right-of-way also provides access to the beach (see Figures 16 and 25) and is a source of concern to neighborhood residents when non-residents attempt to gain vehicle access to the adjacent beach areas. Wooden piles have been placed on the beach to prevent this type of access.

When the parking lot at Southwick Beach State Park is filled on busy days, some of those who can not get into the park drive into the residential area on Jefferson Park Road to look for beach access. Visitors to the State Park can also enter the residential area by walking north along the beach. (See Figure 26.)

Some residents have expressed concern that the



Figure 24: Beach and Embryo Dunes at North Jefferson Park Residential Area Looking South.

lakeward extent of their property ownership is not properly recognized by non-residents and that the legal relationships between their littoral rights and the public's rights of beach access should be clarified.

(Note: *Littoral rights* refer to those water access and use rights (e.g., the right to wharf out to navigable water) associated with the ownership of lands that abut lakes, ponds and the shoreline of tidal water bodies. *Riparian rights* are water access and use rights associated with ownership of lands that abut streams and rivers. These terms, however, are often used interchangeably. In this report, the term "littoral" will be used to describe the rights associated with the ownership of lands adjacent to Lake Ontario and the several ponds in the coastal barrier system.)

The original deeds to the Jefferson Park and Sunset Bluff properties specified that private ownership extended "to the water's edge." The annual and long-term fluctuations of lake levels are said to have been taken into consideration when these deeds were executed. The "water's edge" reference was apparently to ensure that the shore owners would always own an area of beach regardless of high or low water levels.

Regardless of the outcome of questions involving beach ownership or conflicting rights, an underlying problem arises from the incompatibility of the intense recreational use of Southwick Beach and the adjacent, relatively low-density residential area.

#### Summary of Management Concerns in the Residential Area:

*Lack of awareness and public education regarding resource values and natural processes*

*Unauthorized public access from Southwick Beach and Jefferson Park Road*

*Need for technical assistance for erosion control*

*Potential negative effects of individual structural erosion control measures on adjacent property*

*Uncertainty regarding lakeward extent of private property ownership*

*Conflicts between littoral rights and public rights of beach access*

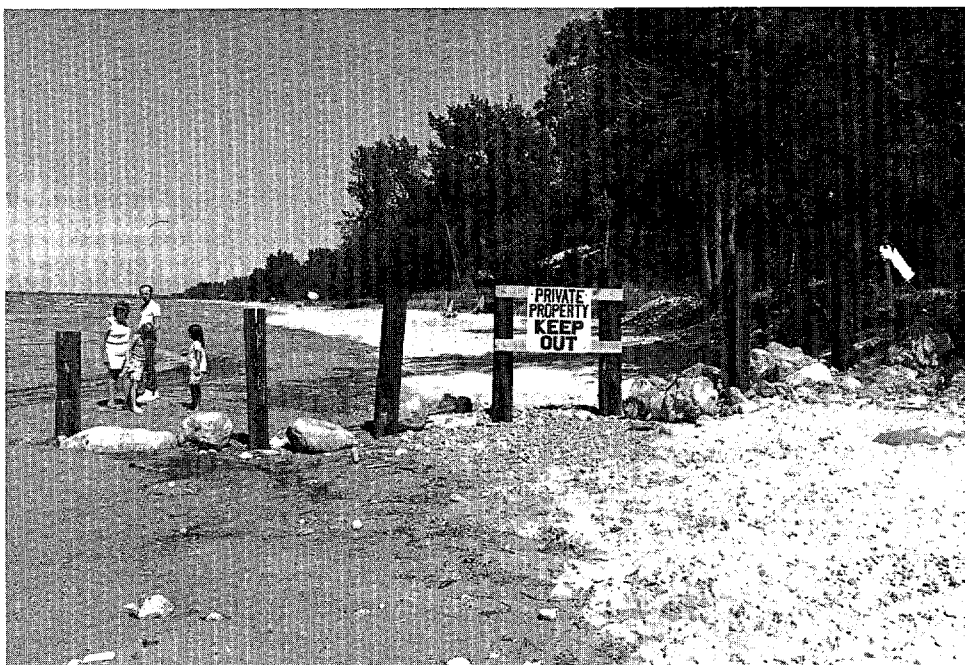


Figure 25: Beach at Town Right-of-Way Looking North.



Figure 26: Northern Boundary of Southwick Beach State Park Looking North.

## GUIDELINES FOR RESOURCE MANAGEMENT IN THE BLACK POND RESOURCE AREA

Some management guidelines for the Black Pond Resource Area address needs in more than one management unit, while others apply specifically to a single management unit.

1. **Special management attention should be directed toward protection of the "high dunes" contained in the El Dorado Preserve and Black Pond Wildlife Management Area.**

For management purposes, the high dunes should be thought of as a single ecological unit, transcending the property boundary between the El Dorado Beach Preserve and the State's Black Pond Wildlife Management Area. The Nature Conservancy and the DEC should coordinate management efforts to ensure future protection of the high dunes. The high dune area should be designated in policies adopted by The Nature Conservancy and the DEC as a "preservation" area to remain in its natural condition. Recreational uses and activities, with the exception of supervised visits for scientific study, should be prohibited in this area.

To aid in the protection of this area, The Nature Conservancy should consider changing the "management-use" category of all or a portion of its preserve to a more restrictive category.

Fencing should be installed along the north side of the traditionally used path which provides access through the dunes at the southern part of Black Pond. This fencing should be used to direct pedestrians along the path and keep people out of the surrounding dunes.

Efforts to stabilize steep-sloped, eroded portions of the secondary dunes should begin with planting and fertilizing shrubs (which will have greater stabilization effect than grasses) at the base of the eroded areas. Once these shrubs take hold, additional plantings should be placed progressively higher on the exposed sand faces in successive years.

2. **Monitoring recreational activities and enforcement of existing regulations for resource use and protection should be increased.**

The DEC should attach a higher priority to enforcement of existing regulations, prohibiting picnicking and all other activities that may result in disturbance of the sand dunes in the resource area. A DEC Conservation Officer should be present during those holiday periods and summer weekends when recreational use is highest. Initial visits by a Conservation Officer should be to inform users of existing regulations; citations for violations should be issued on subsequent patrols. Those using ATVs and other motorized vehicles on The Nature Conservancy and State land should be prosecuted to the fullest extent of the law.

The DEC and TNC should consider the formal designation of a single land steward (or special group that would have stewardship-related responsibilities) to oversee activities on the barrier portion of both the El Dorado Beach Preserve and the wildlife management area. This dune "caretaker" person or group could be responsible for monitoring activities, providing information to the public and reporting violators to the appropriate authorities.

Residents of the cottage area to the south of the wildlife management area should consider forming a citizen watch group that would further contribute to monitoring activities on the barrier system and reporting violations, including the use of ATVs in the dunes and in the wildlife management area.

3. **New and improved signs and barriers should be placed to guide resource preservation and activity.**

New signs should replace current DEC signs listing prohibited activities in the WMA. The signs should identify special, protected resource areas where all uses are prohibited as well as other areas where limited recreational activities may take place. The Nature Conservancy should post the high dune area as a special resource area prohibiting human use. Snowfencing should

be placed in selected areas to not only stabilize dune formations but discourage people from walking on the dunes. Information regarding the permitted and prohibited uses in the barrier system should also be posted at all commonly used access points, including the El Dorado Beach Preserve as well as the Stony Creek boat launch site.

4. **A new and detailed plan to guide use and management of the Black Pond Wildlife Management Area should be prepared by the DEC.**

This management plan should specifically address the coastal barrier and sand dune portion of the WMA in addition to the adjacent wetland area. The plan should identify the beach in the WMA as suitable for limited public use, while the dune system should be identified as a "preservation" area, in which all human uses are prohibited. Measures for the protection of the high dunes should receive special attention in the plan. The plan should contain a strategy for discouraging recreational use in the dunes and for improving enforcement of current use regulations. Current prohibitions against all activities potentially detrimental to the dune system should be reinforced.

A program for stabilizing eroding sand dunes, including identification of appropriate stabilization measures such as vegetation plantings and snowfencing, should be developed. Priority areas for application of stabilization measures should be identified. Priority areas should include those dune sections in danger of being "notched" as a result of pedestrian traffic removing vegetation at the dune crest. These areas are in need of immediate stabilization. Blowouts in the foredunes should not be treated as necessarily more serious and deserving of management attention than blowouts in the backdunes. A program for improving existing signs (see Guideline No. 3 on the preceding page) should also be included in the plan. The plan should be developed by the DEC in coordination with The Nature Conservancy.

5. **Appropriate nonstructural erosion control measures should be established by shorefront property owners.**

Increased technical assistance regarding erosion control measures should be provided to shorefront residents by such agencies as the Jefferson County Soil and Water Conservation District, New York Sea Grant Extension, St. Lawrence-Eastern Ontario Commission and Department of State. The Ontario Dune Coalition can play a leading role in coordinating the provision of this assistance and encouraging property owners to seek assistance. Technical assistance should emphasize the benefits of non-structural erosion control measures and the limitations of structural measures. Property owners should be informed that any structural measures should be established in coordination with measures to protect adjacent properties. Where feasible, property owners should be encouraged to plant vegetation to encourage sand stabilization and dune formation and, where practical, to use common dune walkover structures to reach the beach.

6. **The lakeward extent of private property ownership should be clarified, along with the littoral rights of shorefront property owners and the public's right of beach access.**

Clarification of the littoral rights of shorefront property owners is necessary to resolve current disputes among some shorefront residents and Town of Ellisburg officials and to control public beach access which may negatively affect shorefront areas as well as sand dune resources.

7. **Consistent with the protection of shorefront residential character and the public's right of beach access, public access along the shoreline in the residential section of the barrier should be limited.**

The beach associated with the residential area should not be subject to the same intensity of use as a public park. Signs placed at the boundary between the residential area and Southwick Beach should inform park visitors of restricted use conditions in the residential area. Park users

should be notified of private property rights upon entry into the adjacent park to help reduce potential conflicts. Vehicles should be prohibited from entering the beach from the public right-of-way at the lakeward end of Jefferson Park Road.

8. Additional study should be conducted to determine the cause of sand accretion on the El Dorado Beach shoreline and the potential effect of this accretion on shorebird habitat.

The Nature Conservancy, with assistance from interested agencies such as the Department of State, St. Lawrence-Eastern Ontario Commission and others, should continue to monitor and evaluate the accretion of sand in the El Dorado Beach area and, if feasible, conduct a study to determine the cause of the increasing quantities of sand which have been building up on the shoreline in this area just north of the barrier system. The long-term effect of this accretion on algae growth and therefore on shorebird habitat should be addressed. Some relevant questions are: Is this process a normal occurrence over time, or are human activities to the south accelerating this process in some way? To what extent do lake level fluctuations affect littoral processes near El Dorado Beach?

## CHAPTER FOUR:

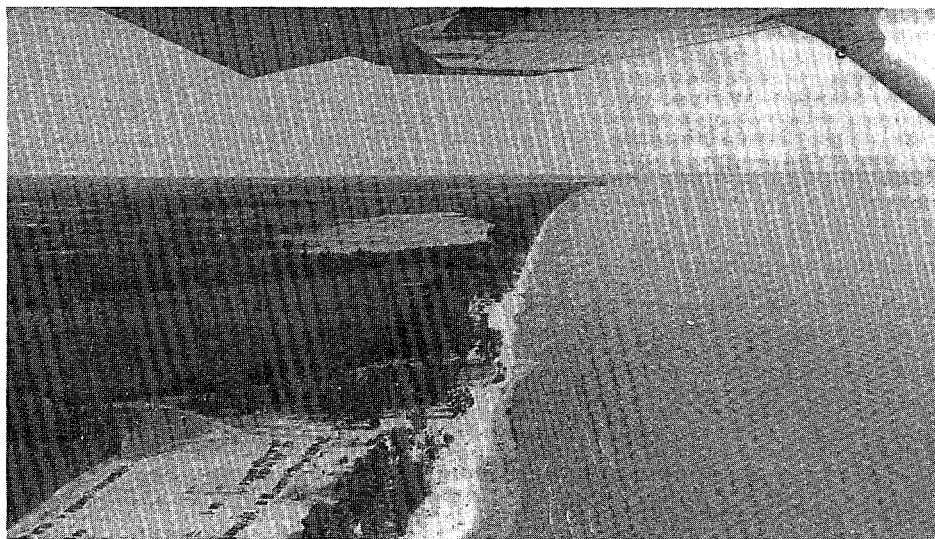
# SOUTHWICK-LAKEVIEW RESOURCE AREA

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*The Southwick-Lakeview Resource Area consists of a diversity of ecosystems including coastal barrier, wetland, stream and pond systems. The coastal barrier in this area extends for approximately five miles from the northern boundary of Southwick Beach State Park to the southern boundary of the Lakeview Wildlife Management Area at the outlet of South Colwell Pond.*

*This chapter contains a description of existing conditions and management concerns in the resource area, and also presents guidelines and recommendations for resource management. Three management units are identified:*

- *Southwick Beach State Park;*
  - *Northern barrier spit section of the Lakeview Wildlife Management Area; and*
  - *Southern barrier spit section of the Lakeview WMA.*
- 



Southwick Beach State Park, Lakeview Wildlife Management Area  
and Lakeview Pond Looking to the South.



## EXISTING CONDITIONS IN THE SOUTHWICK-LAKEVIEW RESOURCE AREA

The Southwick-Lakeview Resource Area (see Figure 27) consists entirely of two parcels of State-owned land (Southwick Beach State Park and Lakeview Wildlife Management Area) managed by two different State agencies. The Office of Parks, Recreation and Historic Preservation (OPRHP) manages Southwick Beach and the Department of Environmental Conservation manages the wildlife management area.

The coastal barrier is breached once in this resource area where two coldwater streams (Sandy Creek and South Sandy Creek) have a common outlet to Lake Ontario. This outlet also separates the Lakeview Wildlife Management Area into northern and southern sections. The dune system becomes progressively more narrow and lower in elevation from north to south. Dune vegetation consists of beach grass, poison ivy, willow, cottonwood, alder, grape and other woody shrubs.

The coastal barrier and associated wetlands in the resource area encompass some 3,400 acres which have been designated by the New York State Department of State as a Significant Coastal Fish and Wildlife Habitat. In addition, this resource area has been designated as a National Natural Landmark by the U.S. Department of the Interior. (See Chapter Two.) The resource area includes several ponds (Lakeview, Floodwood, Goose, North Colwell, and South Colwell) totaling some 455 acres and varying in depths from 1-10 feet. State water quality classifications are as follows: Lakeview Pond (C); North Sandy Creek and South Sandy Creek (C); and Floodwood, Goose, North Colwell and South Colwell Ponds (D).

The aquatic habitat protected by the coastal barrier includes dense stands of cattail, sedge, reed canary grass and other wetland species and consists of approximately 2,000 acres that have been classified as Class 1 wetlands under the Freshwater Wetlands Act. The wetlands lie at an elevation of about 247 feet with the water levels throughout determined by the level of Lake Ontario. Some years ago, several

canals and dikes were dredged and constructed through the marshes by the DEC in an effort to control water levels during dry periods. These dredging and diking efforts have been discontinued.

The aquatic habitat supports many different species of fish and wildlife. Black tern, northern harrier and least bittern are all probable or confirmed nesting species in the area. Migratory waterfowl use the marsh during the spring and fall migrations, and a sizeable concentration of mallards and black ducks overwinter in the area. Aerial surveys for the period 1976-1985 indicated average concentrations of approximately 580 birds in the area each year (2,438 in the peak year), including 210 black duck (570 in the peak year), and 160 mallard (500 in the peak year), along with lesser numbers of mergansers, oldsquaw, Canada goose, scaup and common golden-eye. Lakeview Marsh also supports a large population of furbearing animals and is one of the major muskrat trapping areas in the region. Scattered upland areas throughout the marsh provide opportunities for hunting various wildlife species, including white-tailed deer, eastern cottontail, ruffed grouse, woodcock and ring-necked pheasant.

The two major streams in this area, Sandy Creek and South Sandy Creek, support both warmwater and coldwater fish species. Northern pike spawn in the lower reaches of the creeks and the adjacent ponds. Both streams, upstream to the first impassable barrier, are significant smallmouth bass spawning streams important to the Lake Ontario bass population. Coho salmon and chinook salmon are stocked in both the Sandy and South Sandy Creeks, and steelhead (lake-run rainbow trout) are stocked in South Sandy Creek. These salmonids enter the creeks each fall and spring seeking spawning habitat. In 1984, approximately 10,000 coho and 100,000 chinook salmon were released in each of the streams, and approximately 25,000 steelhead were released in South Sandy Creek.

The high concentrations of salmonids, in combination with the naturally rich native fish fauna, have helped to create a recreational fisheries resource of major economic significance in the eastern Lake Ontario region. Recreational access to this fishery and to the Southwick-Lakeview Resource Area is provided by several public boat access facilities.



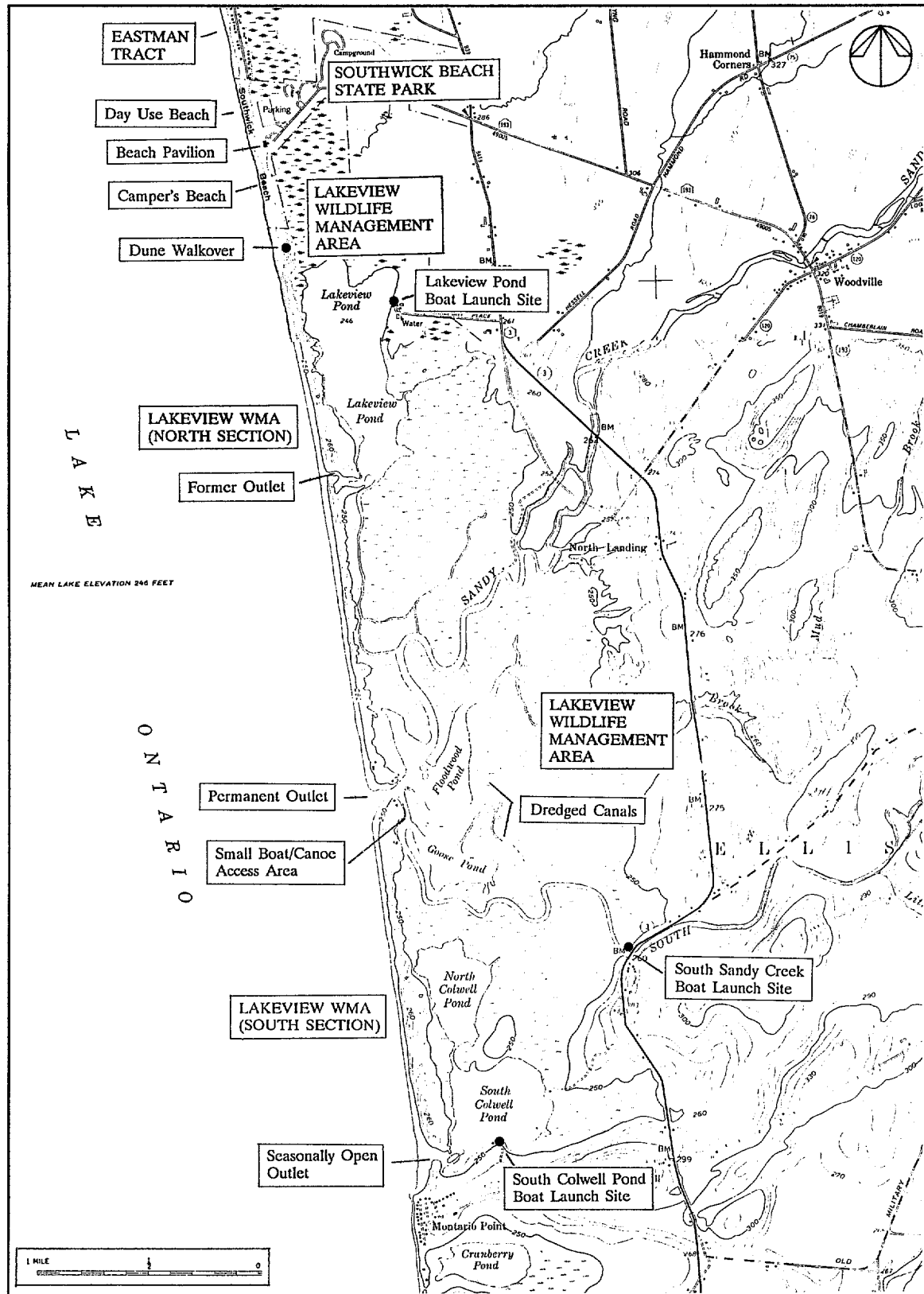


Figure 27: Southwick-Lakeview Resource Area.

Three coastal barrier "management units" are identified: 1) Southwick Beach State Park; 2) the northern barrier spit section of the Lakeview Wildlife Management Area; and 3) the southern barrier spit section of the Lakeview WMA.

### Southwick Beach State Park

Southwick Beach State Park is bounded on the north by the Eastman Tract residential area and on the south by the Lakeview Wildlife Management Area. The park is one of three State parks in the eastern Lake Ontario region providing public beach facilities. The beach areas at the other two parks (Selkirk Shores to the south of the barrier system and Westcott Beach to the north), however, are smaller and much less popular than Southwick Beach. Southwick Beach is one of the major recreational attractions in the eastern Lake Ontario region and the principal public access area on the coastal barrier system. Because of the "ocean-type" beach environment at Southwick, beach users travel from as far away as Rochester and Syracuse to visit the park. Campers visiting the park come from throughout the northeast and from other states as well.

Expansion of the Army's Fort Drum (less than an hour's drive away) is expected to dramatically

increase beach use pressures at Southwick Beach. In response to the Fort Drum expansion the park budget has recently been increased to allow for expansion of facilities and other improvements.

The primary recreational beach at Southwick is located north of the centrally located concession area. This beach, known as the "day use beach," can accommodate approximately 2,000 people. (See Figure 28.) South of the concession, the beach is not supervised by lifeguards and is dedicated for the use of campers. (See Figure 29.) Altogether, the park contains 112 camp sites. The beach south of the pavilion area extends about 1/4 mile to the northern boundary of the Lakeview Wildlife Management Area.

A small area of low vegetated dunes is found south of the beach camping area. (See Figure 30.) A nature trail extends from the park into the wildlife management area and intersects the beach just south of the southern boundary of the park. (See Figure 31.) The part of this trail passing through the dunes of the wildlife management area is the site of the first public dune walkover structure constructed in the eastern Lake Ontario barrier system. (See following description of Lakeview WMA, North Section.)

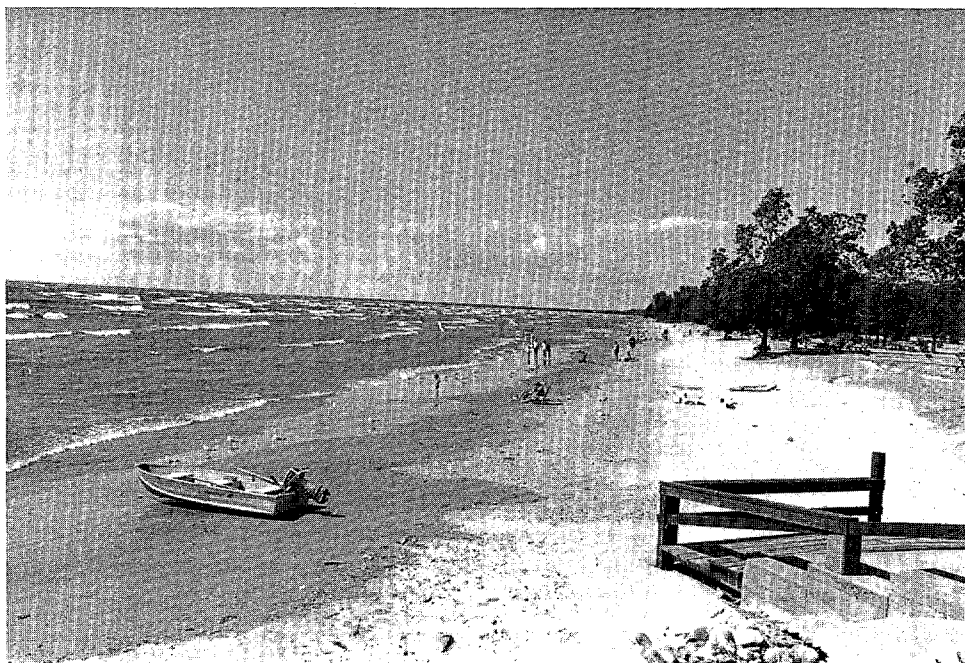


Figure 28: Day-Use Swimming Beach Looking North.

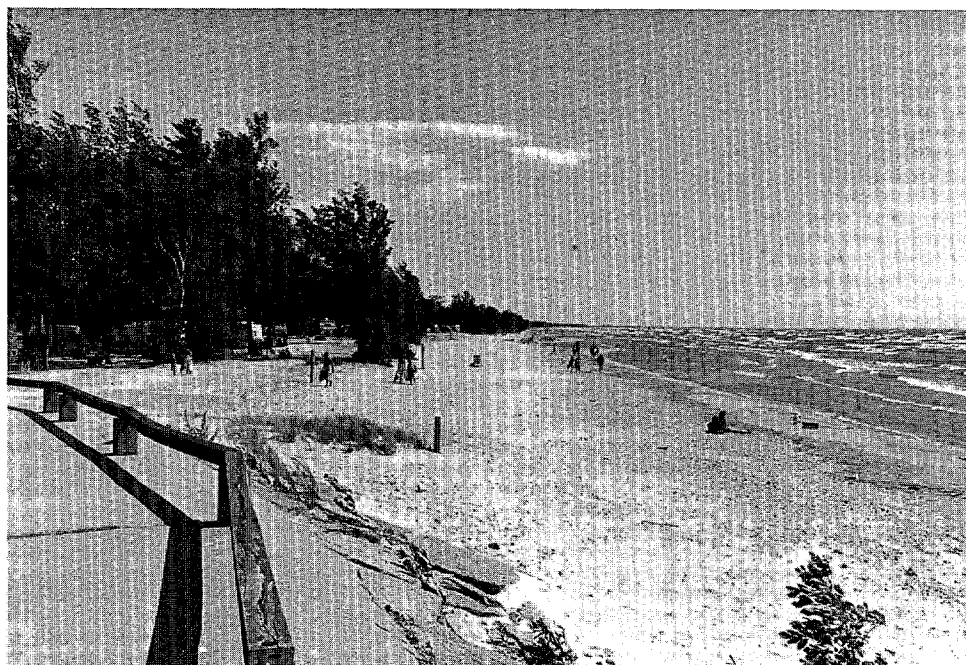


Figure 29: Camper's Beach South of Beach Pavilion.



Figure 30: Beach and Low Dunes Near Southern Boundary of State Park  
Looking South Toward Lakeview WMA.

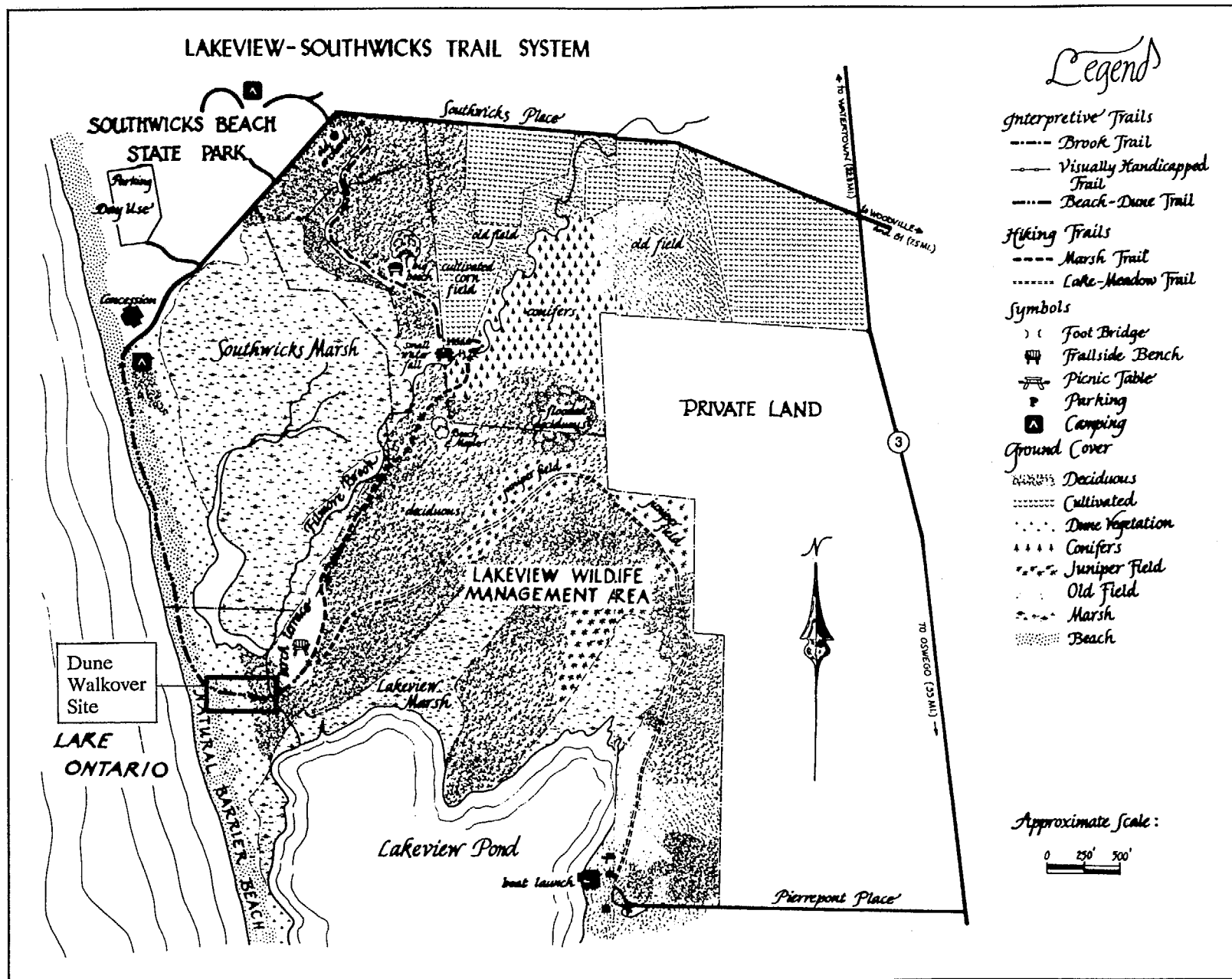


Figure 31: Southwick-Lakeview Trail System.

Visitors to the park commonly enter the Lakeview WMA to walk along the beach, enter the dunes, swim and picnic even though the latter two activities are prohibited by DEC regulations. Swimming often occurs along the WMA shoreline, for example, when the swimming beach at Southwick is closed because of dangerous conditions such as high surf and rip currents. This unauthorized use of the WMA places an added burden on park personnel who must provide emergency assistance even though the WMA is outside park jurisdiction. (Park personnel currently have no authority to enforce DEC regulations governing use of the WMA.) As described in Chapter Three, some park visitors also walk northward from the Southwick beach into the nearby residential area.

Unauthorized ATVs, some used by hunters, have entered the park in the spring and fall, but seldom pose a problem in the summer.

**Summary of Management Concerns  
at Southwick Beach State Park:**

*Increased recreational use pressure caused by Fort  
Drum Expansion*

*Unauthorized activities at Lakeview WMA resulting  
in need for emergency assistance from park  
personnel*

*Difficulties in coordinating park management efforts  
with DEC management of Lakeview WMA*

*Lack of detailed long-range recreation management  
plan coordinated with Lakeview WMA*

**Lakeview Wildlife Management Area**

The entire Lakeview Wildlife Management Area consisting of about 3,500 acres was acquired by the State of New York during the 1960s using public funds raised through passage of a State land acquisition bond act. In the late 1800s the area was used as a private hunting preserve and the Lakeview Hotel (no longer in existence) and Hunting Club

were established. Prior to State acquisition the area was owned by a single family for a number of years. Within the overall wildlife management area (including both north and south sections as described below), separate public use and natural beach areas have been designated. Within the public use area, which consists of the pond and wetland areas landward of the barrier beach, hunting, trapping and fishing are permitted consistent with appropriate State laws.

Since January 1970, the barrier portion of the wildlife management area has been designated as a "natural beach area" by the DEC. The natural beach area is also open for public use subject to the following special regulations which are posted throughout the area:

1. Erecting or posting any sign or notice is prohibited except as permitted by the Department.
2. Building, maintaining or using a fire is prohibited except in an area provided for that purpose.
3. Operating any musical instrument, radio, television set, phonograph or tape recorder, or making any excessive or unnecessary noise in any manner is prohibited.
4. Erecting or maintaining a camp, tent or structure of any kind is prohibited.
5. Injuring, defacing, disturbing or befouling any part of an area or any building, sign, equipment or other property found thereon is prohibited.
6. Removing, injuring or destroying any tree, flower, fern, shrub, rock, sand, or other plant or mineral is prohibited.
7. Disposing of any garbage, sewage, metal or glass containers, refuse, waste, fruit, vegetables, foodstuffs, paper or other litter or obnoxious material is prohibited except in receptacles provided for such purposes.
8. Trapping, hunting or discharging firearms is prohibited.
9. Swimming or bathing is prohibited.
10. Using motorized equipment is prohibited.
11. Picnicking is prohibited.

The barrier beach and dune section of the Lakeview Wildlife Management Area is naturally divided into north and south areas by the combined outlet of Sandy Creek and South Sandy Creek. (See Figure 32.) For management purposes it is useful to think of the north and south sections as separate barrier system management units.

#### Lakeview Wildlife Management Area (North Section)

This northern section of barrier beach in the Lakeview WMA is actually a barrier spit (connected to land at one end only) that measures over 2.5 miles between the Sandy Creek outlet and Southwick Beach. The depth and volume of flow through the outlet prevents pedestrian traffic between the north and south sections of the wildlife management area.

Higher dunes and more mature vegetation are found nearer Southwick Beach; the barrier narrows and the dunes become progressively lower toward the outlet. Old photos of the Coast Guard station that once existed near the mouth of Sandy Creek and South Sandy Creek show that 50 to 60 foot high un-vegetated dunes could be found here.

An old outlet of Lakeview Pond passed through the barrier and was closed off in the late 1960s. This outlet may have originally been opened through a blowout in the dunes. The potential for other blowouts in the foredunes exists and is of concern in terms of the resulting impacts on the marsh behind the barrier.

The shoreline here is typical of the shoreline throughout the barrier system in that it is not straight, but is crenulated with large beach cusps that give the shoreline a scalloped appearance. During extended periods of calm, the shoreline is generally straighter than during windy periods.

The more southern section of the barrier spit provides habitat for a variety of shorebird species and during the 1950s the wildlife management area provided nesting sites for eagles and ospreys. Due to the narrowness of the beach in this area, however, it appears that nesting shore birds and recreational use can not coexist.

Dune vegetation includes beach grass, cottonwoods, white pines, evening primrose, cherry, heartleaf willow, wormwood, grapes, poison ivy and sea spurge. Access to this northern section of the wildlife

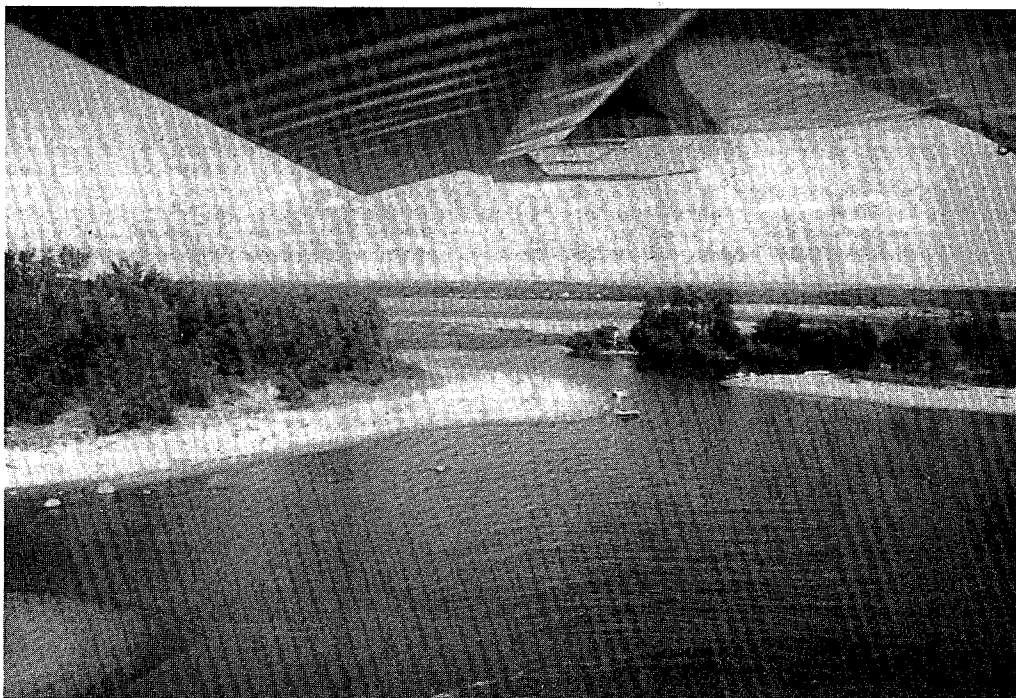


Figure 32: Combined Outlet of Sandy Creek and South Sandy Creek.



management area is from Southwick Beach State Park and by boat from Lake Ontario and from the inland side of the barrier. In addition to the blowout section now protected by the dune walkover (see below), the dunes in the northern part of the area have been damaged by human use. A number of trails have been worn throughout this section of the barrier, some leading to "party areas" in the interdunal area and some crossing the barrier to Lakeview Pond. (See Figure 33.)

The dune system near the outlet of Sandy Creek and South Sandy Creek is less impacted by human use. This is because of the relative remoteness of the area: it is a fair distance to Southwick Beach to the north and the outlet channel which is deep year round does not permit pedestrian traffic from the south section of the wildlife management area. Debris flowing through the mouth of the creeks has washed onto the beach in the wildlife management area.

Southwick-Lakeview Dune Walkover. A nature trail through Southwick Beach State Park extends into the wildlife management area, passing through the dunes and intersecting the beach just south of the park boundary. (See Figure 31.) Because of its connec-

tion with the existing trail system and its location in a relatively heavily used section of the barrier system, the portion of the trail through the dunes was selected by the Ontario Dune Coalition as the site of the first public dune walkover project in the barrier system. (See Figure 34.) Construction of the walkover project, funded by the New York State Department of State, was completed in October of 1988. Just inland of the walkover, however, passage on the trail has been interrupted for over two years by the washout of a footbridge that remains to be replaced by the DEC.

A major purpose of this walkover structure is to focus pedestrian movement onto a designated and restricted pathway through the dunes and thereby reduce the ongoing destruction of stabilizing vegetation caused by unrestricted access to the beach over the foredune. The structure also serves an educational purpose, illustrating the benefits of wise resource management in the barrier system, and provides an elevated view of the barrier system environment.

The structure is intended to serve as a model for other, similar structures that may be needed in other portions of the barrier system. The major part of the



Figure 33: Pedestrian Pathway Through the Dunes at Lakeview WMA.



Figure 34: Dune Walkover Structure at Lakeview WMA.

structure, including that part passing over the primary dune, is elevated to accommodate natural sand migration (allowing for movement of windblown sand), growth of vegetation, ease of maintenance, and enhancement of scenic views. The elevation of the structure at the primary dune line is intended to facilitate the closure of the existing blow-out.

**Public Uses.** Although picnicking and swimming are prohibited by DEC regulations, the area is patrolled only irregularly by Conservation Officers, and enforcement of existing regulations is difficult. Swimming often occurs here when the beach at Southwick is closed for safety reasons. ATV traffic is also prohibited but these vehicles have been operated in the dunes, particularly during the spring and fall when entrance through the park is less supervised. A cable formerly placed across the beach at the northern boundary of the wildlife management area to discourage the entrance of ATVs could not withstand the effects of high water and is no longer in place. Dogs on the barrier beach also cause problems by eroding the dunes and disturbing shorebirds, effectively preventing potential nesting. Surfing takes place in the spring and the fall and some people ride bicycles on the hard-packed sand by the water's edge.

Given all of these existing uses, it is not difficult to understand why some public confusion has arisen over the purpose of the wildlife management area. Some users of the area have expressed the attitude that because this land was acquired with public funds a variety of uses should be permitted. Signs posted by the DEC listing a number of prohibited activities (although violations are often not enforced) are seen by some to contribute to negative public attitudes regarding resource protection objectives. Expansion of Fort Drum is anticipated to further complicate the existing problems by doubling the use pressures on the wildlife management area in the next decade.

Recognizing the difficulties in enforcing the current prohibitions on swimming and picnicking, DEC Region 6 considered allowing swimming and picnicking on the barrier beach within the northern section of the Lakeview Wildlife Management Area. Since swimming and picnicking were not seen by the DEC to interfere with any of the general purposes of wildlife management areas or to adversely impact the sand dunes, the DEC proposed to permit these uses in the wildlife management area in 1986. This proposal received opposition from several groups concerned with environmental resource protection. These groups argued that increased human-induced



destruction of the dunes would accompany sanctioned use of the beach. The OPRHP, responsible for management of the adjacent Southwick Beach State Park, also opposed the proposal due to a number of potential management problems that were not addressed. As a result, the DEC's proposal was not implemented.

**Summary of Management Concerns  
in Lakeview North:**

*Increased recreational use pressures caused by Fort  
Drum expansion*

*Difficulties in coordinating the DEC's  
WMA management efforts with  
the OPRHP's management of Southwick Beach*

*Spill-over of park visitors from Southwick Beach*

*Potential negative impacts associated with allowing  
more intensive recreational use in a portion of the  
WMA*

*Delay in replacing washed-out bridge on dune  
walkover trail*

*Unauthorized recreational uses  
(swimming, picnicking, etc.)*

*Trespassing ATVs*

*Difficulties with enforcement of existing  
use regulations*

*Impacts of recreational use on shorebirds in  
southern part of area*

*Human disturbance of sand dune vegetation and  
formations*

*Lack of detailed long range management plan for  
the WMA*

**Lakeview Wildlife Management Area  
(South Section)**

The south section of the coastal barrier at the Lakeview Wildlife Management Area is bounded on the north by the combined outlet of Sandy Creek and South Sandy Creek and on the south by the outlet of South Colwell Pond. (See Figure 35.) The barrier shoreline here is slightly more than 1.5 miles long. The outlet of South Colwell Pond is seasonally closed; it typically becomes plugged with sand during the summer due to reduced outflows. (See Figure 36.) This allows pedestrian access to the south portion of the WMA by local residents from the Montario Point residential area to the south. Since the Montario Point area is privately owned and no-trespassing signs are posted, the degree of public use is more limited in the south section of the WMA.

When the South Colwell Pond outlet is opened by increased runoff and flow from the pond, the barrier here can be defined as a "barrier island". Access to the barrier is also possible by small boat or canoe launched from State boat launching sites in South Colwell Pond and South Landing.

This management unit shows less signs of recent human use impacts than any of the other barrier portions of the wildlife management areas in the barrier system. (See Figure 37.) There is evidence, however, of much past disturbance with numerous wind-caused blowouts in the foredunes. Conditions would appear favorable for dune development here, but because the dunes are of only mid-size, it would appear that some human disturbance has historically taken place. The presence of a "medano" dune (a migratory type of dune characterized by a single high hill somewhat parabolic in shape with a steep leeward slope) in the area provides evidence of past disturbance. This type of dune is generally an indicator of previous widespread dune destabilization.

Primary and secondary dune lines interrupted by numerous blowouts are found throughout most of the area. Mature stands of cottonwoods are scattered throughout, although in some sections 70-80% of the interdunal area is open, unvegetated sand. In some of the interdunal areas, wetland-like conditions are found where the sand has been blown away to the groundwater level. The water table in the dune

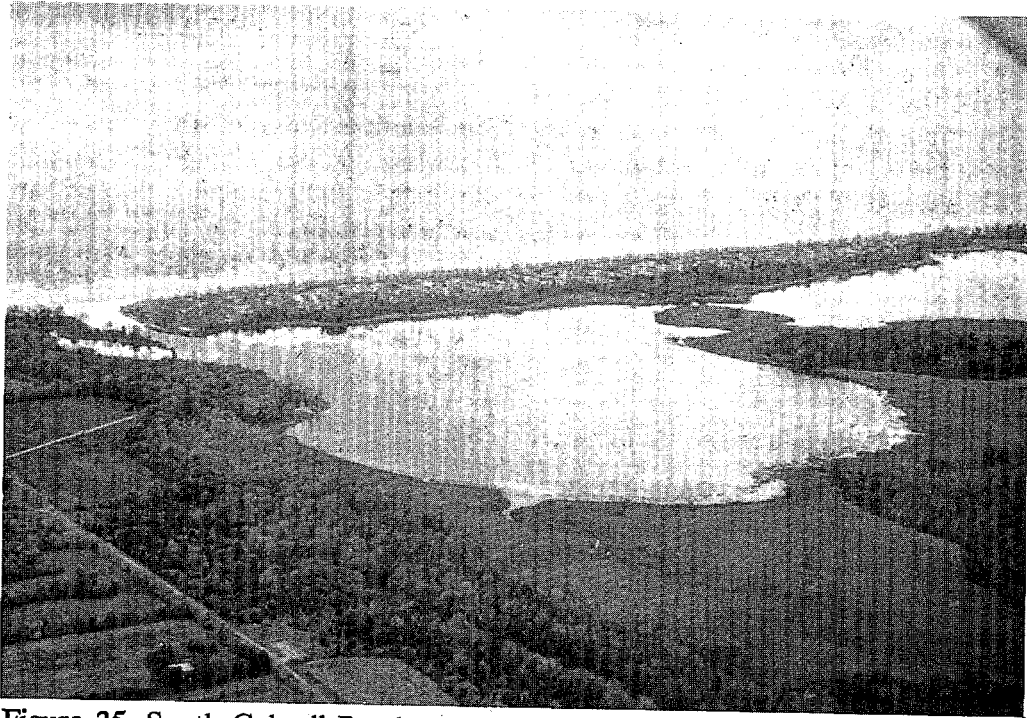


Figure 35: South Colwell Pond and Coastal Barrier at Lakeview WMA (South Section).

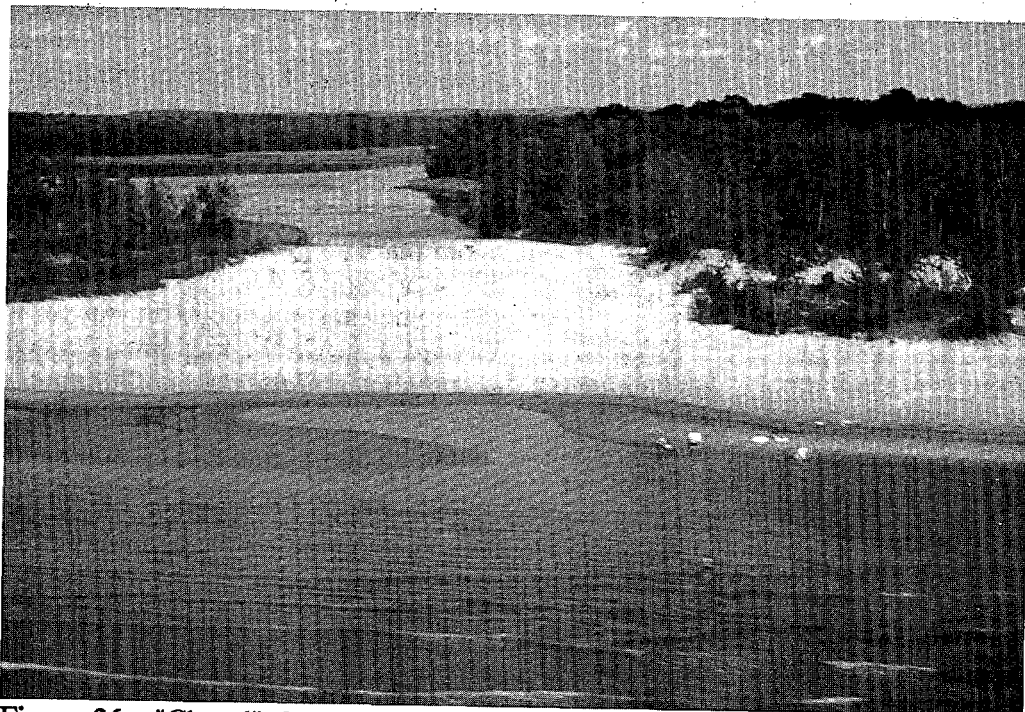


Figure 36: "Closed" Outlet at South Colwell Pond.



**Figure 37:** Relatively Undisturbed Beach at Lakeview WMA (South Section).



**Figure 38:** South Sandy Creek, Small Boat Access Point and Pedestrian Pathway Through the Dunes on Coastal Barrier at Lakeview WMA (South Section).

area here as throughout the barrier system is slightly higher than lake level.

The beach in the northern part of this area near the outlet of Sandy Creek and South Sandy Creek provides valuable habitat for shorebirds. This area is also used for recreational activities. A traditionally used small boat and canoe access point is found on the back side of the barrier near the outlet, and hikers and picnickers have worn a path through the back dune in this area. (See Figure 38 on previous page.) The channel behind the barrier is relatively deep and the creek flows with high velocity at times as evidenced by erosion of the bank at the back side of the barrier.

### Summary of Management Concerns in Lakeview South:

#### *Unauthorized recreational activities*

*Difficulties with enforcement of existing regulations*

*Conflicts between recreational use and shorebirds*

*Human disturbance of sand dune vegetation and formations*

*Lack of detailed long-range management plan for the protection of this least disturbed section of WMA*

### **GUIDELINES FOR RESOURCE MANAGEMENT IN THE SOUTHWICK- LAKEVIEW RESOURCE AREA**

The priority management recommendation for this resource area cuts across the boundary between Southwick Beach State Park and Lakeview Wildlife Management Area to address the need for increased coordination in the management of these two areas.

1. Improved coordination between the OPRHP and the DEC in the management of the State Park and wildlife management area is necessary.

Because of the interrelationship between use of the State park and wildlife management area,

improved management coordination is necessary to respond to increasing use pressures, including those pressures resulting from expansion of Fort Drum. Without this coordination, the continued spill-over of users from the park can be expected to result in increased adverse impacts on natural resource values in an increasingly larger portion of the WMA to the south as well as conflicts with private property owners in the residential neighborhood to the north. Also, improved coordination (to replace the washed-out bridge which has affected the park's trail system, for example) is necessary to ensure optimum public enjoyment of these public lands.

As a first step toward achieving improved management coordination, the DEC and the OPRHP should initiate formal discussions to review the conditions and issues affecting both the park and the WMA. The two agencies should reach consensus on current and expected future management concerns and agree on the need to respond to the increasing use pressures in a coordinated way. Agreement should also be reached on the need to prepare detailed and coordinated management plans as described below.

2. Detailed, coordinated plans to guide use and management of the State Park and wildlife management area should be prepared.

These management plans should be developed by the OPRHP and the DEC to accommodate increased recreational use in appropriate locations as well as to protect sensitive natural resources. The plans should identify areas for concentrated recreational use and areas for the preservation of natural resource values.

With regard to Southwick Beach, the OPRHP should consider long-term expansion of the existing public beach area by utilizing the area currently reserved for camping to the south of the beach pavilion. In the future, pressures for beach use may necessitate use of this additional area for swimming and picnicking.

The management plan should address the possibility of establishing a nursery for beach grass

at Southwick Beach that can be used by State agencies and shorefront residents to help stabilize dune formations in the barrier system. To the extent possible, the OPRHP should encourage the growth of small sand dunes inland of the active beach areas. OPRHP should also investigate the feasibility of acquiring adjacent, undeveloped upland areas to accommodate park expansion.

For the Lakeview WMA, the management plan should specifically address the coastal barrier and sand dune portion of the WMA in addition to the wetland portion. In formulating the plan, the following guidelines should be followed.

**3. A program for stabilizing eroding sand dunes in the WMA should be established.**

This program should include identification of appropriate stabilization measures such as vegetation plantings and sand fencing. Priority areas for stabilization measures should be identified, including areas in need of immediate management attention.

The establishment of additional dune walkover structures in appropriate locations should be considered. The rate of closure of this blow-out should be monitored as a measure of the walkover's effectiveness.

**4. The designation of a special recreational use area within a relatively small section of the WMA near the park should be pursued.**

In order to best accommodate increased use pressures, it may be feasible and desirable to designate the northernmost section of the coastal barrier beach within the WMA as a special recreational use area. This designation might allow for more concentrated and active recreational activities by park visitors in a clearly defined and carefully managed section of the WMA adjacent to the park. Authorization for more active recreational use of this area would require revision of the current rules and regulations governing use of this section of the WMA. For example, current WMA prohibitions against swimming and picnicking would be lifted in this

area.

Authorization for expanded recreational use here, however, would have to be balanced by increased protection of natural areas elsewhere on the barrier beach in the WMA. (See Guideline No. 5 on the following page). The establishment of a special recreational use area would "legalize" some existing unauthorized uses such as swimming and sunbathing on the beach that have little adverse effect on the WMA, but must be accompanied by measures to effectively prohibit destructive unauthorized uses in the dune system away from the beach. Designating a special recreation area will require careful monitoring and control of activities by authorized personnel.

Appropriate methods for ensuring effective management of the area, including special management controls and regulations, should be developed jointly by the DEC and the OPRHP. Because of proximity to the State Park, primary responsibilities for monitoring and enforcement would most logically be assumed by the OPRHP, and the OPRHP should be involved in the development of policies for resource use and management in this area. For OPRHP to assume these responsibilities, however, an expanded operating budget will be required. One option to be explored for coordinating management responsibilities between the OPRHP and the DEC is the development of a Memorandum of Agreement (MOA) between the two agencies. This MOA could provide specific authority for the OPRHP to manage and supervise a specific section of the WMA designated for special recreation use, and establish prohibitions on unauthorized uses in adjacent areas identified by the DEC.

The actual transfer of property from the DEC to the OPRHP to accommodate expanded recreational use in the State Park would be a long-term option for consideration. This option should be considered only if future use pressures become too great to handle within existing park boundaries and resource values on the barrier within the WMA are being adversely affected by uncontrolled and unauthorized recreational uses



spilling over from the park.

If this area is deemed suitable for more active recreational use, additional facilities and structures to complement the dune walkover described in Guideline No. 6 below should be considered for development.

5. **Along with designation of a special recreational use area in the northernmost section of the wildlife management area, more restrictive use controls should be considered for application in other sections of the WMA.**

The major portion of the coastal barrier in the wildlife management area, including all but the beachfront adjacent to Southwick Beach in the north section and all of the south section, should be designated as a protected natural beach area. All current use restrictions should remain in effect in the south section, and more restrictive controls should be established for the part of the north section adjacent to the proposed special recreational use area.

The more restrictive use controls should be directed toward protection of the dune ecosystem from human disturbance and protection of shorebird habitat. For example, an area might be designated north of Sandy Creek in which passage along the beach might be prohibited during shorebird nesting periods.

During other times of the year, the beach in most of the WMA should be identified as suitable for limited public use. The dune system, however, should be identified as a natural resource "preservation" area in which human activities are prohibited or strictly limited.

6. **Monitoring activities and enforcement of existing regulations for resource use and protection should be improved.**

It is clear that the designation of a special recreational use area and imposition of more restrictive use controls will require increased monitoring and enforcement capabilities on the part of both the OPRHP and the DEC. In addition to the enforcement of any new use

controls, the DEC should attach a higher priority to enforcement of existing regulations that apply to all activities that may disturb the sand dune ecosystem in the WMA. A Conservation Officer should be assigned to patrol the area at least during those holiday periods and summer weekends when recreational use is highest. Initial patrols should be to inform users of existing regulations: citations for violations should be issued on subsequent visits.

7. **New and improved signs and barriers should be placed to guide resource use and activity.**

These signs should replace current DEC signs listing prohibited activities in the wildlife management area. The new signs should identify special, protected resource areas as well as areas where limited recreational activities may take place. A complete listing of use regulations and prohibitions should be provided at the entry gate to Southwick Beach which is the principal point of access to the wildlife management area, rather than on small, posted notices in the WMA.

Snowfencing should be placed in selected areas to not only stabilize dune formations (see Guideline No. 3) but discourage people from walking on the dunes.

More prominent signs and a physical barrier should be placed at the boundary between Southwick Beach and the residential area to the north to discourage park visitors from entering the residential area. Users of Southwick Beach should be advised that the privilege of using the beach can be revoked if impacts on adjacent residential areas occur. The public may have the right to walk along the beach (or in the water), but this should not be misconstrued as the right to use private property like a public park.

In coordination with construction of the dune walkover project, signs should be erected along the nature trail to provide scientific and educational information pertaining to sand dune ecology. Signs providing information on special resource areas and use restrictions on the barrier system should also be placed at the small boat launching sites providing access to the WMA.

## CHAPTER FIVE:

# NORTH AND SOUTH SANDY PONDS RESOURCE AREA

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*This resource area, centered on North Sandy Pond, contains the largest barrier-pond ecosystem on Lake Ontario.*

*Included in this chapter is a review of existing conditions and management concerns in the resource area. Guidelines and recommendations for resource management are also presented. Five management units are identified:*

- *Montario Point-Cranberry Pond;*
  - *North Sandy Pond north spit;*
  - *North Sandy Pond south spit;*
  - *Sandy Island Beach; and*
  - *South Pond barrier.*
- 



"Relict" Sand Dune on the North Spit with North Sandy Pond in the Background.

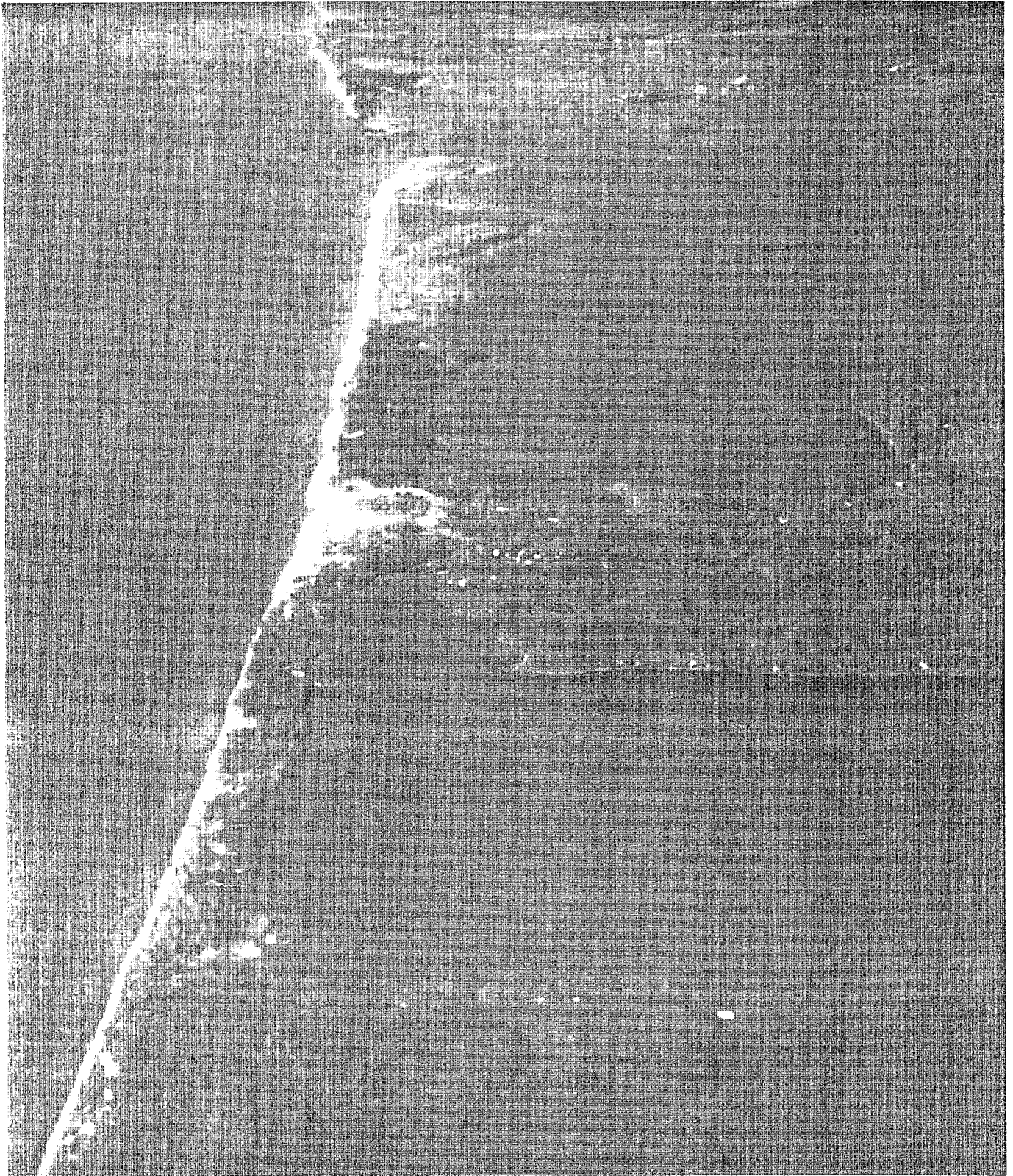


Figure 39: South Sandy Pond, North Sandy Pond and the Coastal Barrier Looking to the North.  
(Photograph provided by Ray Buecheler, Camillus, New York.)



## EXISTING CONDITIONS IN THE NORTH AND SOUTH SANDY PONDS RESOURCE AREA

The North and South Sandy Ponds (see Figures 39 and 40) and the fish and wildlife habitat associated with the ponds have been designated by the New York Department of State as a Significant Coastal Fish and Wildlife Habitat encompassing some 3,000 acres. Although human activities in the area have resulted in considerable habitat disturbance (development pressures have increased in recent years and the ponds receive intense boating, fishing and other recreational use during the summer months), these ponds serve as a major concentration area for many fish and wildlife species.

North Sandy Pond, also known as North Pond and Big Sandy Pond, contains approximately 2,300 acres of open water area with dense beds of submerged aquatic vegetation. The pond is about 3 miles long and 1 to 1½ miles wide. Although much of the pond is no deeper than 10-12 feet, the submerged vegetation effectively reduces these depths throughout much of the pond. North Sandy Pond is connected to Lake Ontario by a shallow, constantly shifting inlet approximately 300 feet wide and flanked on both sides by barrier spits. On the lake side of the barrier beach, the bottom is sandy and slopes gently to a 12 foot depth about 1,500 feet offshore.

The length of the barrier from Montario Point south to the inlet, including the north spit, is slightly over two miles. The south spit also extends for slightly over two miles. The barrier spits contain extensive and well-developed sand dune formations, including high dunes on both the north and south spits. (See Figure 41.) The Corps of Engineers has estimated Lake Ontario shoreline recession rates on the spits for several historical periods. Recession rates are consistently higher on the overwash flats flanking the inlet and the area of lower sand dunes on the south spit. The high dunes provide sediment to the beach during storms thereby slowing the rate of shore recession in the high dune areas.

Tributaries to the pond are the Little Sandy, Blind, Lindsey and Skinner Creeks. These tributaries are important cold-water fisheries habitats and three of

the four are designated by the New York Department of State as significant coastal fish and wildlife habitats. Sizeable areas of emergent wetlands have formed at the lower ends of these tributaries and in small sheltered bays at the north (Renshaw Bay) and south ends of the pond. The State water quality classification of North Sandy Pond is "B"; the tributaries are classified "C".

South Sandy Pond contains about 300 acres of open water area separated from Lake Ontario by a narrow barrier. There is no direct exchange of water between South Sandy Pond and Lake Ontario, but the pond is connected to North Sandy Pond by a shallow and narrow channel. Sandy Island Beach, a commercial beach open to the public for a fee, is located on the barrier near the connecting channel. South Pond is deeper than North Pond—up to 30 feet deep in some places. Adjacent to the pond are approximately 220 acres of emergent marsh, scrub-shrub wetland and forested wetland. The water quality classification of the pond is "C".

North and South Sandy Ponds provide important habitat values for both pond and lake-based fisheries. The dense beds of submerged aquatic vegetation, the relatively high water quality, sandy substrates, wetlands and tributaries create favorable conditions for spawning and nursery use by many species. The overall abundance of fish in North and South Sandy Ponds has been found to be among the highest of any location in eastern Lake Ontario. Previous studies have documented at least 20 warmwater species in the area including gizzard shad, brown bullhead, white perch, yellow perch, largemouth bass, pumpkinseed, bluegill, rock bass and northern pike. North Pond is a major concentration area for yellow perch in Lake Ontario; the population overwinters and spawns in the pond from late April to July. Concentrations of white sucker, smallmouth bass, alewife and various salmonid species occur in North Pond prior to and after spawning runs in the major tributaries. The abundance and diversity of the fisheries resources in the two ponds provide important opportunities for recreational fishing.

North and South Sandy Ponds also provide important habitats for many wildlife species. Studies of the area have documented at least 50 species of breeding birds, eight species of mammals and six species of

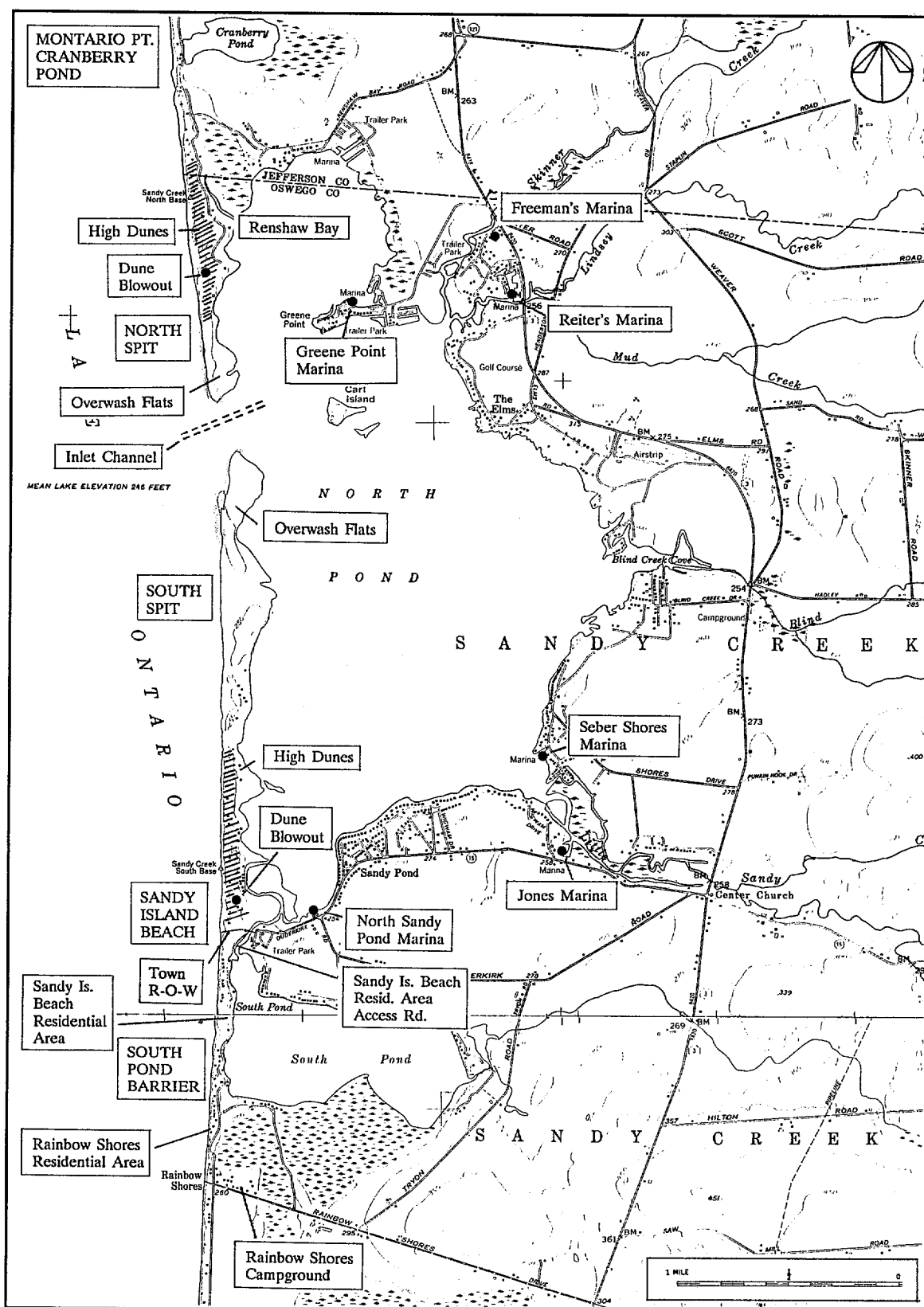


Figure 40: North and South Sandy Ponds Resource Area.

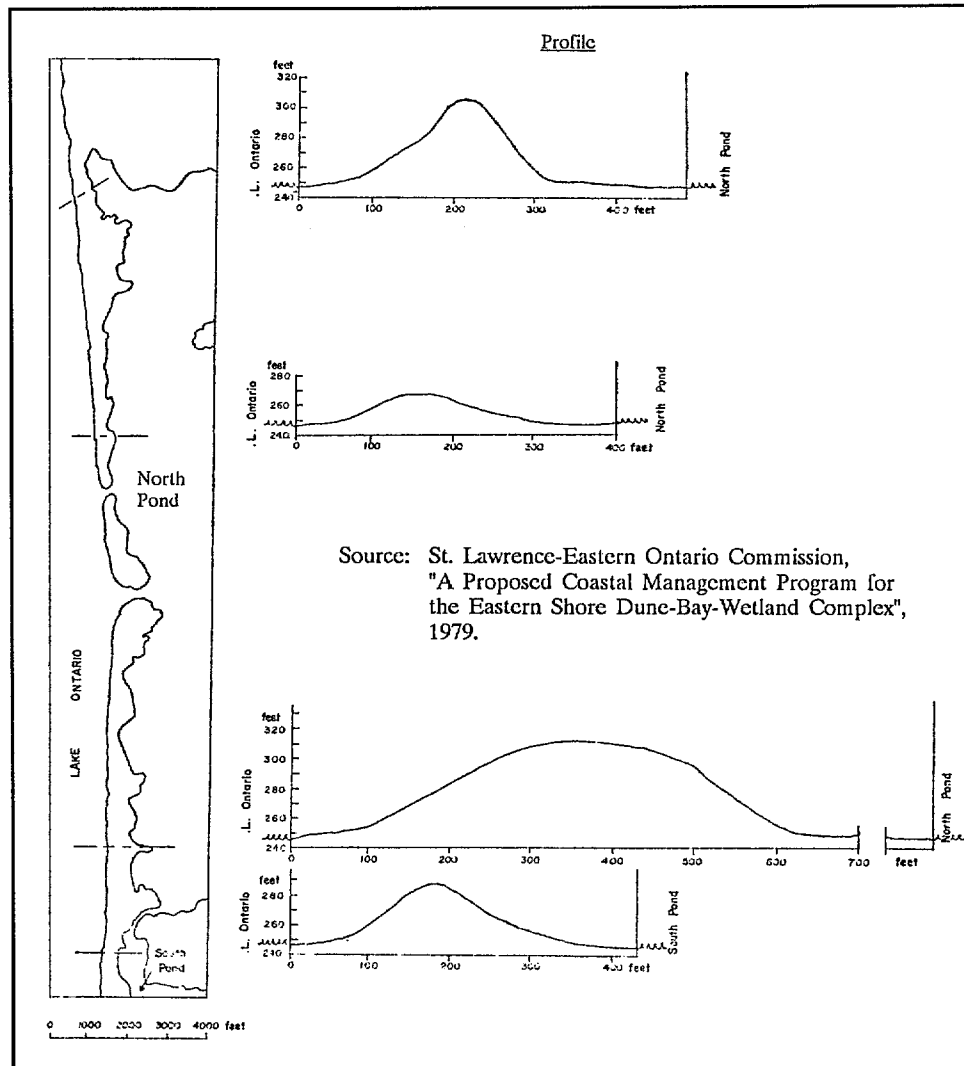


Figure 41: Profile of Barrier Spits.

amphibians and reptiles in the resource area. The highest diversity of species occurs in the largest undisturbed wetland areas, such as the north and south ends of each pond. These wetlands serve as nesting and feeding areas for a variety of waterfowl and other marsh birds, including green-backed heron, American bittern, least bittern, mallard, wood duck, blue winged teal, Virginia and sora rails, common moorhen, black tern, belted kingfisher, marsh wren, red-winged blackbird and swamp sparrow. For many years, the last remaining colony of common terns on the New York side of Lake Ontario has nested on a low-lying island just south of Carl Island in North Pond, with an estimated 35-40 pairs present in 1984 and 1985, down from 100 pairs in 1982. No more than 20 pairs were observed in 1988.

Other wildlife species found in and around the ponds include white-tailed deer, beaver, raccoon, mink, muskrat, greenfrog, northern leopard frog and painted turtle.

The coastal barrier in the North and South Sandy ponds area is an integral part of the fish and wildlife habitat. The barrier and its extensive sand dune formations protect the ponds from prevailing winds, buffer water level fluctuations in potential nesting areas, and provide a refuge for concentrations of waterfowl during spring and fall migrations. The barrier spits are heavily used as feeding and resting areas by large numbers of migrant shorebirds, and the undeveloped dunes provide a valuable migration stop for many species. Birds in southward overland

migration tend to funnel to the east and west of North Sandy Pond as they approach from the north, and thus a concentration of migrating birds can be found along the barrier. The abundance and diversity of avian species occurring in this area is rarely equaled elsewhere on Lake Ontario, and North and South Sandy Ponds are therefore regarded as critical avian habitat and one of the prime bird watching locations in the Great Lakes coastal region.

Vegetation on the barrier includes quaking aspen, sugar maple, black cherry and red oak on the back dunes with some trees estimated at 50 to 100 years old with diameters of up to two feet. Other species found in the dunes include cottonwood, black gum, common rush, black grass and several species of willow, silverweed and wormwood. These barrier plant communities represent dynamic ecosystems and as such provide considerable natural habitat and dune stabilization values as well as opportunities for ecological study.

The land surrounding the two ponds is privately owned and much of it is developed for seasonal and year-round residential use. North Sandy Pond, because it is protected from the open waters of Lake Ontario by the coastal barrier system, provides

sheltered conditions for the development of recreational boating facilities, and several privately operated marina facilities have been developed on the Pond. A large number of charter fishing boats also operate out of the ponds. In 1986, 55 charter fishing boats operated from North Sandy Pond. By 1988 the number of charter fishing boats operating from the pond had grown to approximately 100.

Development of additional boating facilities has been limited in part, however, by the narrow, shallow and shifting entrance channel between the barrier spits (See Figure 42). This channel is currently marked by private aids to navigation maintained by the New York State Office of Parks, Recreation and Historic Preservation. The U.S. Army Corps of Engineers, Buffalo District, has studied the feasibility of providing federal navigation improvements in this entrance channel and in 1986 described two alternative plans for improvement. One plan involved dredging a new entrance channel, stabilized by breakwaters, through the barrier on the south spit. The other would provide a 100 foot wide dredged channel through the existing inlet. This second option, providing for a dredged channel 100 feet wide and 6 feet deep through the present opening is currently being considered by the Corps for implementation.

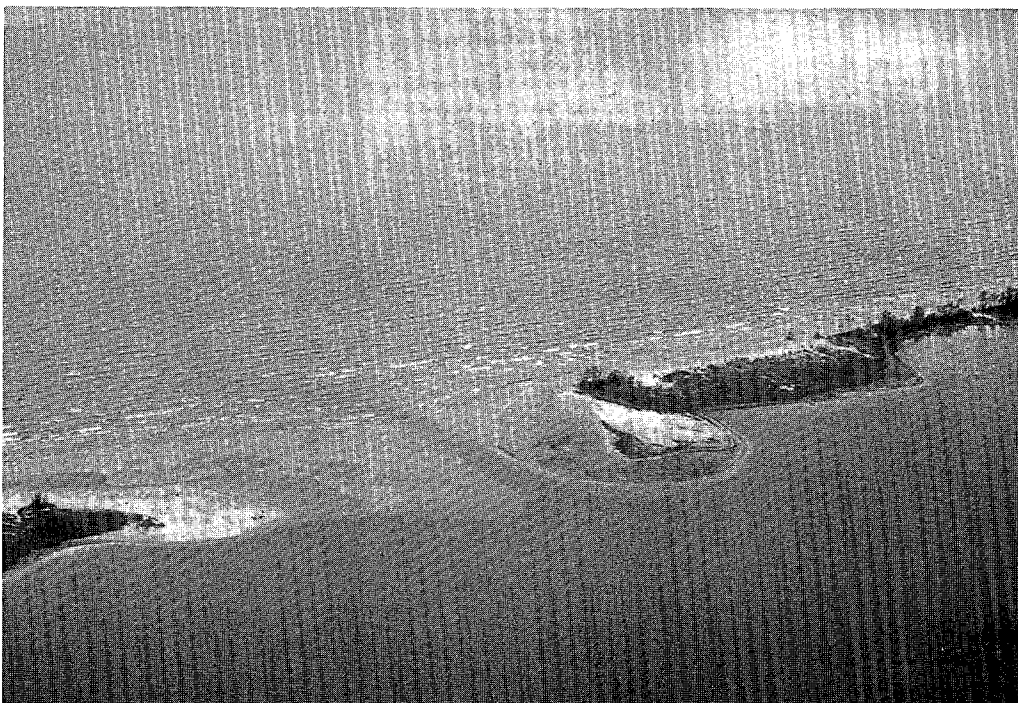


Figure 42: North Pond Inlet; North Pond in Foreground.

Maintenance of this channel, should it be dredged, would be required at frequent intervals due to rapid inlet shoaling. This shoaling is caused by the long-shore movement of sand, wave overwash and delta formation, and takes place even during short term lake level fluctuations set up by wind shear. Establishing a more permanent channel would remove a major natural deterrent to additional boating activities in the Pond, and increase the potential for additional impacts on the natural environment.

Four historical inlet locations have been identified on the coastal barrier at North Sandy Pond. (See Figure 43.) Based on review of historical evidence, the Corps of Engineers suggests these inlets closed over time because flow from the pond can only support a single outlet. The older inlets eventually closed completely as soon as a new outlet broke through a narrow stretch of the barrier elsewhere.

Three of the principal natural factors affecting coastal barrier system dynamics can be seen at work

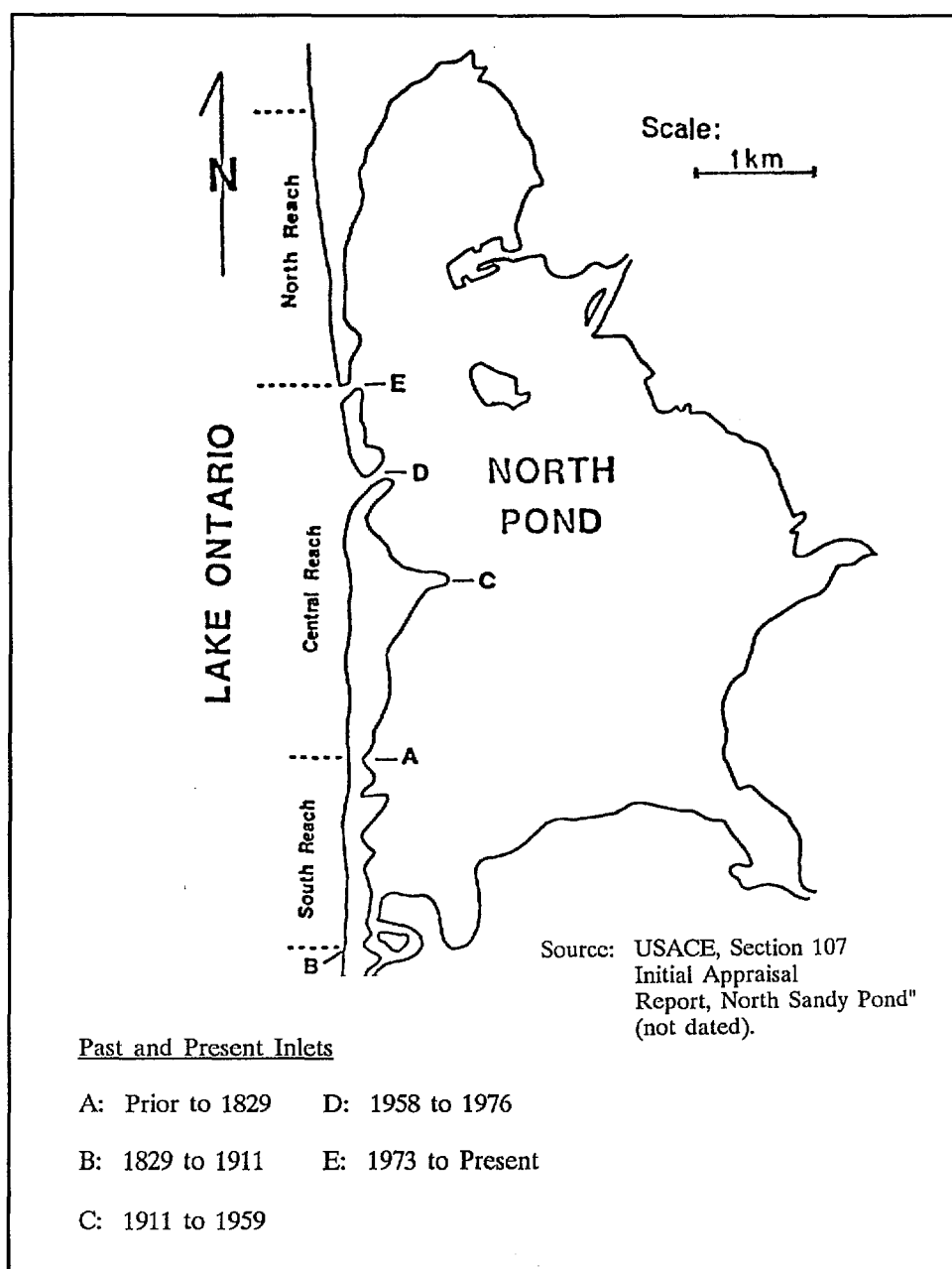


Figure 43: Past and Present Inlets.

in the North Pond area. These are: inlet migration, washover events and wind-driven sand transport.

The Town of Sandy Creek is currently participating in a resource management planning program sponsored by the St. Lawrence-Eastern Ontario Commission and focusing on the Sandy Ponds area. A Sandy Pond Resource Management Committee has been appointed by the Town Board to oversee this study which is scheduled for completion in the summer of 1989 and is intended to result in recommendations for resource use and management in this area.

The coastal barrier portion of the North and South Sandy Ponds Resource Area can be described in terms of five management units: 1) Montario Point-Cranberry Pond; 2) North Sandy Pond north spit; 3) North Sandy Pond south spit; 4) Sandy Island Beach; and 5) South Pond barrier.

#### Montario Point-Cranberry Pond

The Cranberry Pond and the associated coastal barrier are functionally independent of the larger environmental system defined by the North and South Sandy Ponds but, because of their proximity to the larger system, are described here.

The Cranberry Pond barrier contains no sand dune formations and consists of basically tillish, rocky and bluff type shoreline. (See Figure 44.) Residential development extends from the closed outlet of South Colwell Pond (described in Chapter Four) southward to the natural sand dune formations near the end of Renshaw Bay Road. This section of shoreline does not contain the same type of dynamic beach and dune system found throughout most of the eastern Lake Ontario barrier system.

Cranberry Pond is a shallow pond with heavy submerged aquatic growth separated from the lake by a narrow barrier. (See Figure 45.) The pond is surrounded primarily by woody vegetation. In the past, water has flowed from the pond to the lake through an earthen dam either built or modified by beavers. The presence, however, of both live and dead flooded deciduous trees and aquatic shrubs suggest that a different water regime was present in the recent past. Stabilized, elevated water levels resulting from damming would account for this type of plant community composition.



Figure 44: Rocky Shoreline North of Montario Point Road.

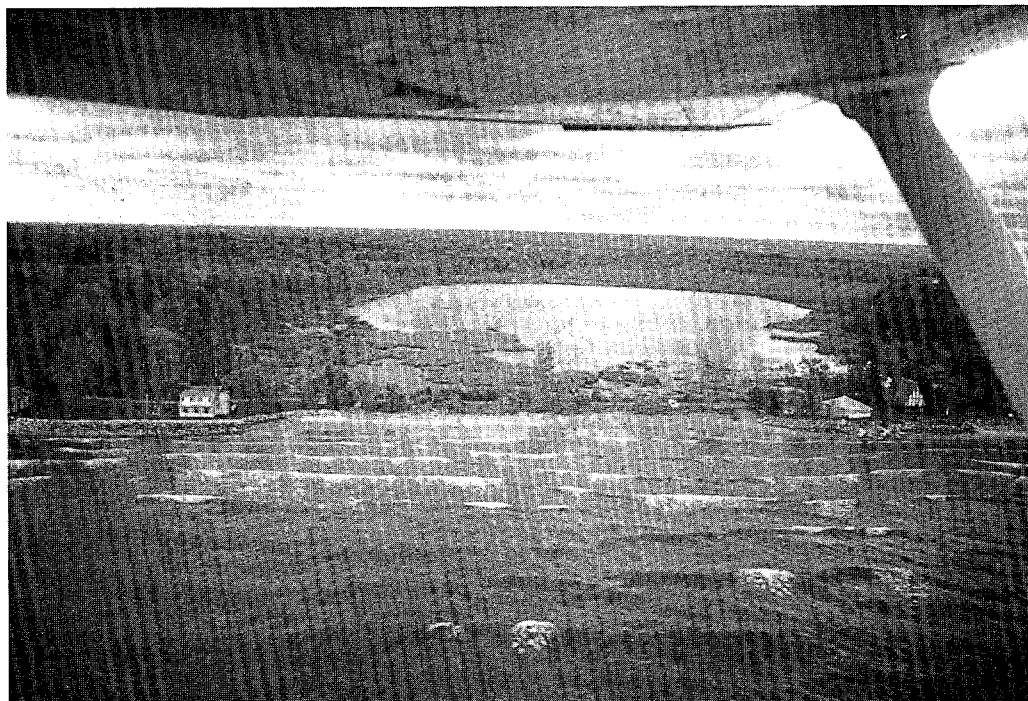


Figure 45: Cranberry Pond and Coastal Barrier.

### North Sandy Pond North Spit

This portion of the eastern Lake Ontario barrier system consists of a barrier spit extending from the northern edge of high dunes near the end of Renshaw Bay Road southward to the Sandy Pond inlet. This spit, averaging about 550 feet wide, contains some of the most impressive dunes (up to 70 feet above lake level) in the overall barrier system as well as sand flats near the inlet. (See Figure 40.)

In the northern portion of the spit along Renshaw Bay Road, seasonal homes have been built in the high dunes. As in other developed sections of the barrier system, property owners here display different attitudes and awareness regarding natural resource use and protection. Some individual homeowners have undertaken sand stabilization projects using beach grass and shrub plantings. (See Figure 46.) The beach grass that has been used is the Cape Cod variety of American beachgrass purchased from a nursery in Michigan. The strands appear thicker than those of the indigenous plants but this may be due to heavy application of fertilizer when the grass was planted. Two or three years were required before these beach grass plantings stabilized to the

extent now evident. The survival rate of the shrub plantings (Norway spruce), however, was very low due in part to winter snowmobile damage and winter desiccation.

South of Renshaw Bay Road, high dunes with steep, exposed sand faces subject to accelerated erosion are found. (See Figure 47.) Ongoing erosion is evidenced by the large fallen trees along the beach and the exposed root systems of still standing trees on the dune crests. The broken remains of one house built too near the Lake Ontario shoreline can also be seen. When the large trees eventually fall they will take large amounts of sand with them, further accelerating erosion of the dunes. The high lake levels prior to the summer of 1987 caused much of the erosion impacts now evident. The effects of those high lake levels were noted by one property owner in describing the loss during the winter of 1987 of a tree estimated to be 70 years old.

The north spit also includes the largest wind-caused dune blowout in the eastern Lake Ontario barrier system. (See Figure 48.) The only other large blowout is at Sandy Island Beach, several miles to the south (see page 82). The initial cause of this blowout, and to what extent human disturbance helped



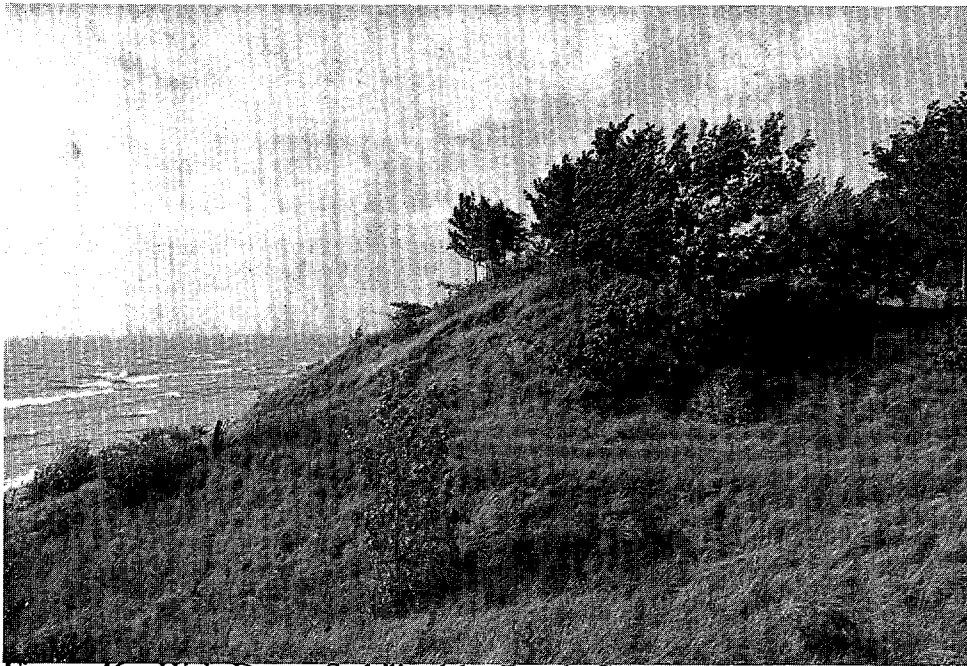


Figure 46: High Dunes Stabilized by Beach Grass on the North Spit.



Figure 47: High, Exposed Dune Subject to Accelerated Erosion on the North Spit.





Figure 48: Dune "Blowout" on the North Spit.

to create it, is uncertain. It has been in existence, however, in the recollection of at least one area resident, for over 30 years. Large quantities of sand are being blown through this area, resulting in a large mound of advancing sand being deposited on the North Pond side of the spit. This advancing sand caused one property owner to move his affected home on the pond side to a more protected area nearby. Additional sand is also blown and washed over the barrier and around the spit and deposited on the pond side of the barrier.

South of the high exposed dunes, the barrier flattens and becomes more narrow leading to the sand flat north of the North Sandy Pond inlet. (See Figure 49.) This sand flat has apparently been overwashed often by high water in the past, most recently during the severe storm of April 5 and 6, 1979. During these overwash periods the spit has been denuded of vegetation. The washover flat is now vegetated with cottonwoods.

The sand flats provide valuable habitat for shorebirds, and this area, along with the south spit sand flats, was a historic nesting area for piping plovers. The last nesting of these birds is thought to have occurred here in the early 1960s. These sand flats, together with the sand flats on the northern portion

of the south spit are the last remaining privately owned, undeveloped and unprotected sections of the eastern Lake Ontario barrier system that provide valuable habitat for shorebirds and other avian species.

The sand flats on both sides of the inlet also represent the most dynamic section of the overall barrier system. The instability and the migratory nature of the inlet is clearly evident from a comparison of historic air photos. (See Figure 50.) A steel retaining wall on the lake side of the spit near the inlet marks the site of a house that was originally built on the pond side. The remains of this house also testify to the instability and changing nature of this area.



Figure 49: Overwash Sand Flat on the North Spit.

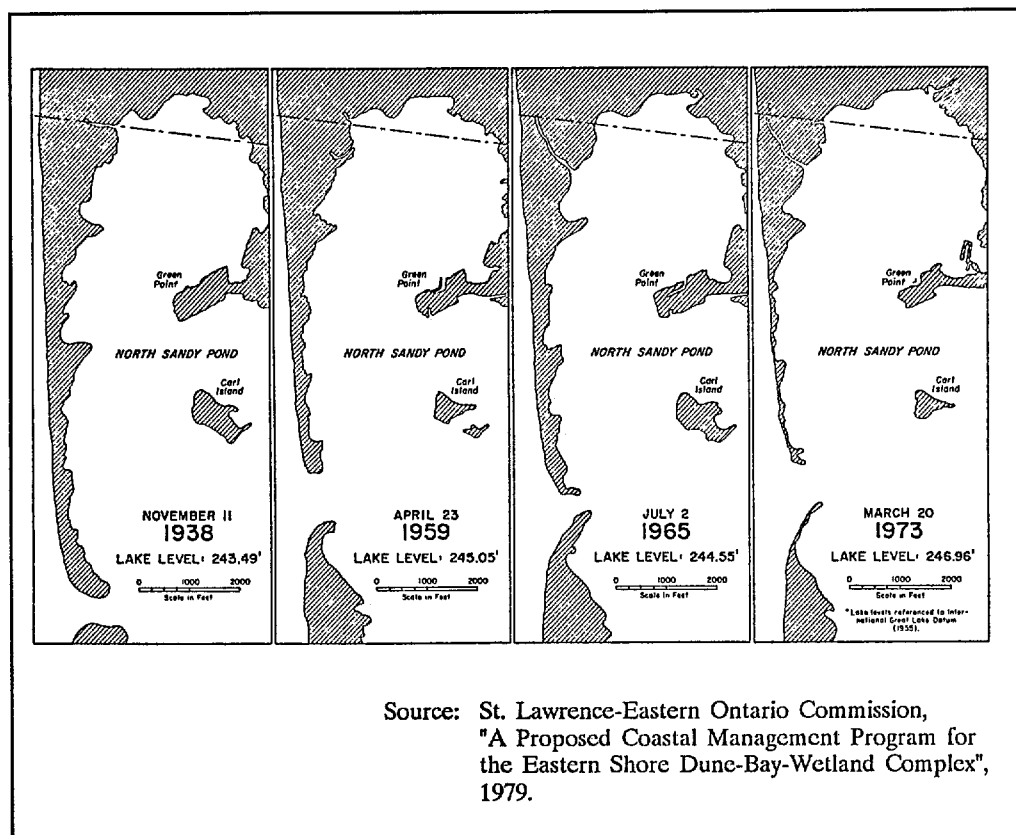


Figure 50: Inlet Changes.

### Summary of Management Concerns on the North Spit

*Erosion of relict dunes accelerated by high lake levels  
and human activities*

*Lack of homeowner awareness of resource values  
and natural processes*

*Human disturbance of migrating and nesting  
shorebirds*

*Continued erosion of sand through large dune  
blow-out*

*Poor development practices causing dune  
destabilization and other environmental impacts  
Trespassing snowmobiles*

*Potential for future development in valuable natural  
resource areas and in hazardous areas*

### North Sandy Pond South Spit

This barrier spit extends from Sandy Island Beach to the North Sandy Pond inlet. (See Figure 40). Seasonal homes have been built on the southern portion of the spit; the northern portion is undeveloped and privately owned. There is no road access to the homes on the south spit; access is achieved primarily by small boat from the pond side and by walking along the beach on the lake side. Some residents, however, drive four wheel drive vehicles along the beach to get to their homes. (See Figure 51.) A parking area for residents is located at Sandy Island Beach. (See page 82.)

Barrier widths range from about 240 feet to 2,000 feet. Wider sections of the barrier represent "recurve spits" and deltas associated with historical inlet locations.



**Figure 51:** South Spit Beach Used for Vehicle Access to Seasonal Cottages, Looking North.

This management unit contains high dunes with steep exposed sand faces similar to those on the north spit. (See Figure 52.) The high dune area extends about 1/2 to 3/4 of a mile northward from

the Sandy Island Beach and contains the largest extent of mature forest vegetation in the overall barrier system. In this high dune area, the houses are older and are located primarily on the pond side



**Figure 52:** High, Exposed Dune Subject to Accelerated Erosion on the South Spit.

of the barrier.

In an effort to protect property against erosion on the lake side, some home owners have added rip rap and gabion structures at the base of the dunes. (See Figure 53.) Gabions, used as an alternative to solid shore protection structures such as seawalls, incorporate stones enclosed in wire mesh cages to absorb wave and high water energy. Gabions are usually not recommended for use in high erosion locations.

Individual efforts at shore protection on the south spit have served to compartmentalize the shoreline somewhat. In areas where shore protection structures have been placed at the toe of the dunes, the dunes have remained vegetated above the shore protection and have receded less from the shoreline. These measures, however, have also induced a "flanking effect" which has caused accelerated erosion of adjacent areas. While effective in the short-term, structural measures of this type are typically less effective against long-term erosional processes.

On the steep, unvegetated slopes, dune erosion is a continuing process as evidenced by uprooted and

fallen trees in some sections. This process has recently been slowed by the low lake level of the past two years. The high dunes here were most likely formed as secondary dunes and fronted by primary dunes that have long since been eroded.

To the north of the high dunes, the barrier is wider and newer homes have been built on lower dunes. (See Figure 54.) The individual property owners here also display different attitudes and awareness with regard to the use and protection of environmental resources. In some areas the natural low dune formations are protected; there are also examples, however, of dune vegetation being trampled and 4-wheel drive vehicles being driven through the dunes.

North of the residential development, the barrier remains wide and contains two fields of dunes and a large swale area. This section of the barrier is privately owned by a single owner. Although undeveloped, the barrier here is heavily disturbed by human use and a number of blowouts are present. This area receives heavy use by ATVs which gain access from the adjacent residential area. A number of trails have been cut through the dunes by these trespassing vehicles. Even though it is privately owned, the barrier here is generally viewed as public

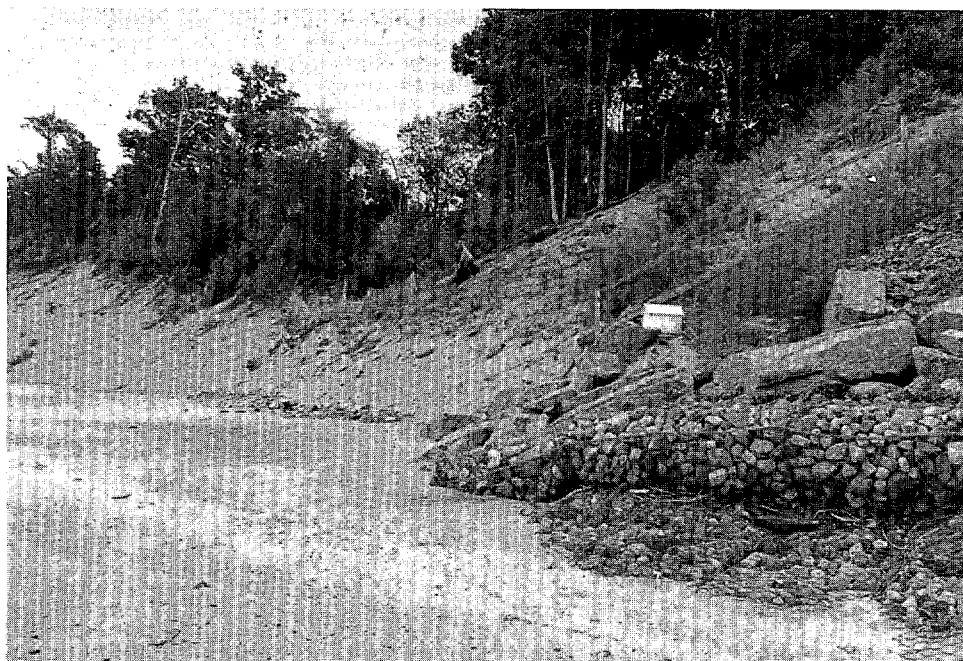


Figure 53: Gabion Structures and Rip Rap at the Toe of Eroding Dune on the South Spit.



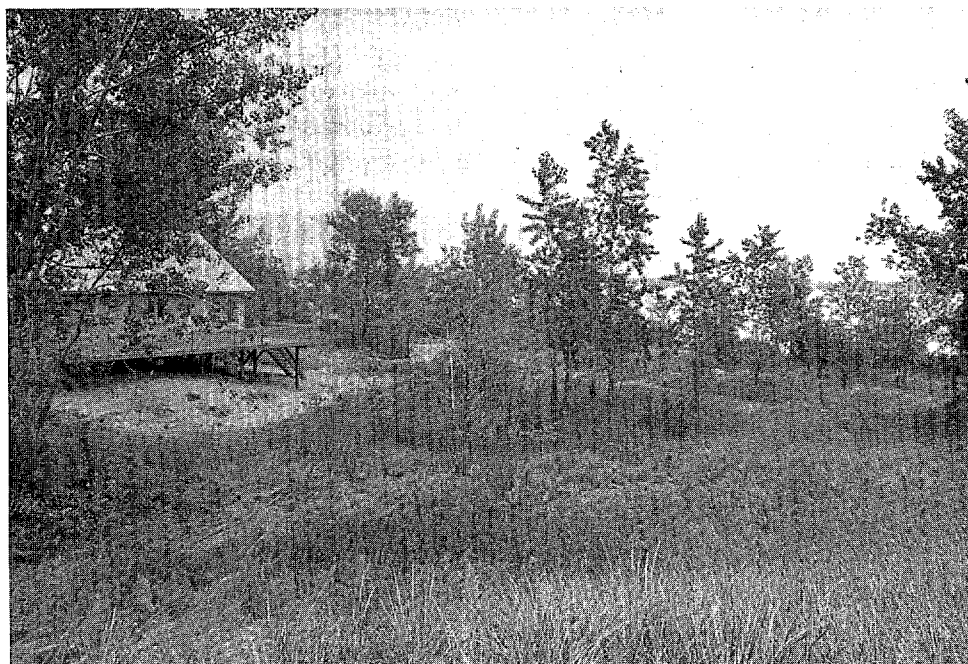


Figure 54: New Home Construction in Low Dune Area on the South Spit.

land due to the absence of development. A popular recreation area known locally as the "boat beach" is found here on the North Pond side of the spit. (See Figure 55.) As a result, recreational activity is more intense than on the north spit. Most users arrive by small boat to picnic and some also camp in the dunes.

The overwash area at the northern part of the spit is valuable shorebird habitat similar to the southern section of the north spit. In 1984, one pair of piping plovers nested successfully on the south spit, marking the first confirmed breeding by this species in upstate New York since its general extirpation in the mid-1950s.

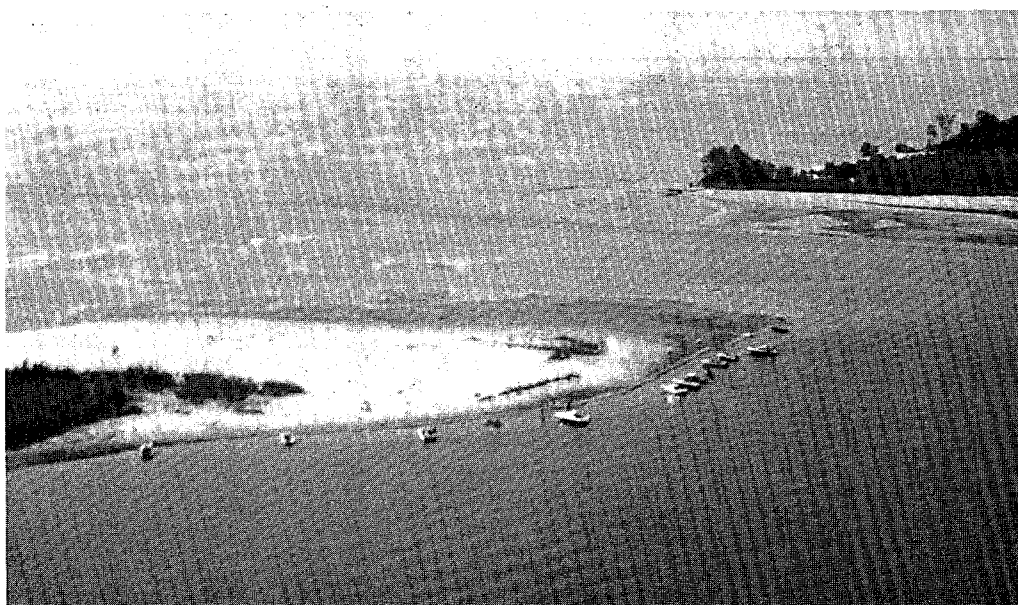


Figure 55: The "Boat Beach" on the South Spit with North Sandy Pond in Foreground.

**Summary of Management Concerns  
on the South Spit:**

*Erosion of relict dunes accelerated by high lake levels and human activities*

*Lack of awareness of resource values and natural processes*

*Compartmentalization of the shoreline caused by structural erosion control measures*

*Human disturbance of migrating and nesting shorebirds*

*Human disturbance of sand dune vegetation and dune formations*

*Unauthorized recreation activities (including camping, picnicking and trespassing ATVs) on undeveloped, privately owned lands*

*Potential for future development in valuable natural resource areas and in erosion hazard areas*

**Sandy Island Beach**

Sandy Island Beach is a privately owned, commercial day use beach open to the public for a fee of \$3 per person. The beach is located near the connecting channel between North Sandy Pond and South Sandy Pond and contains about 1,600 feet of shoreline. An historic inlet to North Sandy Pond was once located in this area. The owners of this property formerly owned the White Sands Beach commercial campground on the barrier near Deer Creek Marsh (see Chapter Six) and were preparing that area for recreational development prior to State acquisition of a large portion of the Deer Creek Marsh and barrier.

The Sandy Island Beach property is intersected by a Town right-of-way that leads to Lake Ontario between the beach and beach parking area. (See Figure 56.) This right-of-way, formerly used for hauling fish nets from the lake, provides access to residential properties to the north as well as to Sandy Island Beach. Unfortunately, the right-of-way also allows unauthorized ATVs, which have caused damages to the dune system, to enter the area.

A private right-of-way crosses through the Sandy Island Beach property on the pond side of the dune



**Figure 56:** Town Right-of-Way to Lake Ontario at Sandy Island Beach.

system and provides access to the seasonal homes on the south spit. A parking area for the owners and users of these homes is located here. (See Figure 57.) To the south, a roadway on the pond side of the barrier provides access to residents of cottages on the South Pond barrier.

The dune system in the Sandy Island Beach area has been heavily impacted by human use. There are currently no controls in evidence to guide or limit pedestrian access through the dunes and unauthorized ATV use is causing erosion and nuisance problems. The owner is considering more extensive use of piles and cables to limit ATV access from the back side of the dune system. The second largest dune blowout in the eastern Lake Ontario barrier system is found here. (See Figure 58.) (The largest blowout, already described, is located on the north spit.) Currently, no measures are being employed to limit the movement of sand through this blowout and a large mound of advancing sand is being deposited on the pond side of the barrier near the parking area used by residents of the south spit. (See Figure 57.) It is not clear what type of disturbance originally created the blowout; it appears that historical sand mining may have contributed to its formation. Past efforts to use snowfencing in the

area have not been successful as the fencing was used by vandals as firewood.

The owner recently planned the development of a campsite for approximately 70 recreational vehicles in an area behind the dunes near the narrow channel that connects North Pond with South Pond. This proposal, however, is currently inactive. The Oswego County Soil and Water Conservation District and the St. Lawrence-Eastern Ontario Commission have worked with the owner to implement a soils management plan for the proposed camping area as well as the beach and dune portions of the property.

A section of dunes south of the beach parking lot was graded several years ago to prepare additional recreational area and/or campsites. This work, however, led to increased dune erosion and wind-blown sand that blocked the roadway leading to the cottages on the South Pond barrier (see page 84). As a result, a court injunction was obtained by the St. Lawrence-Eastern Ontario Commission to halt this work but the damage to the dune system has never been repaired.

In recent years an increasing number of cobbles have appeared on the beach. (See Figure 59.)



Figure 57: Parking Area for South Spit Residents at Base of Advancing Sand Mound Near Sandy Island Beach.





**Figure 58:** Dune Blowout at Sandy Island Beach Looking Toward Lake Ontario.



**Figure 59:** Cobbles on the Beach at Sandy Island Beach.

These cobbles have been raked as necessary and moved away from the water's edge toward the base of the dunes in an effort to improve the recreational attractiveness of the swimming beach.

**Summary of Management Concerns  
at Sandy Island Beach:**

*Lack of effective management controls for guiding  
or limiting pedestrian access through dune areas*

*Unauthorized ATV use*

*Vandalism of erosion control measures*

*Continued erosion of sand through large dune  
blow-out*

*Unauthorized construction work resulting in dune  
destabilization and blocking of cottage roadway*

*Potential effect of campground expansion on  
natural resource values*

*Accretion of cobbles in beach area*

**South Sandy Pond Barrier**

This narrow barrier, approximately one mile long, separates South Sandy Pond from Lake Ontario and has been developed with seasonal homes and a private commercial campground. The Sandy Island Beach residential area is located on the northern half of the barrier (see Figure 60) and the Rainbow Shore residential area and Rainbow Shores campground are found on the southern half.

Access to the Sandy Island Beach residential area is from the north, through Sandy Island Beach, by a road located on the pond side of the dunes. As noted earlier, part of this road passes behind an area of Sandy Island Beach that was graded to prepare camp sites. The resulting erosion has caused a continuing build-up of sand on the access road and this sand must be regularly removed from the road to keep it passable. Although a court injunction halted the dune grading, the erosion continues and the pre-existing dune condition has not been restored.

The barrier shoreline here is particularly subject to erosion. There is little if any beach, even at the current low water levels, to serve as a buffer and as

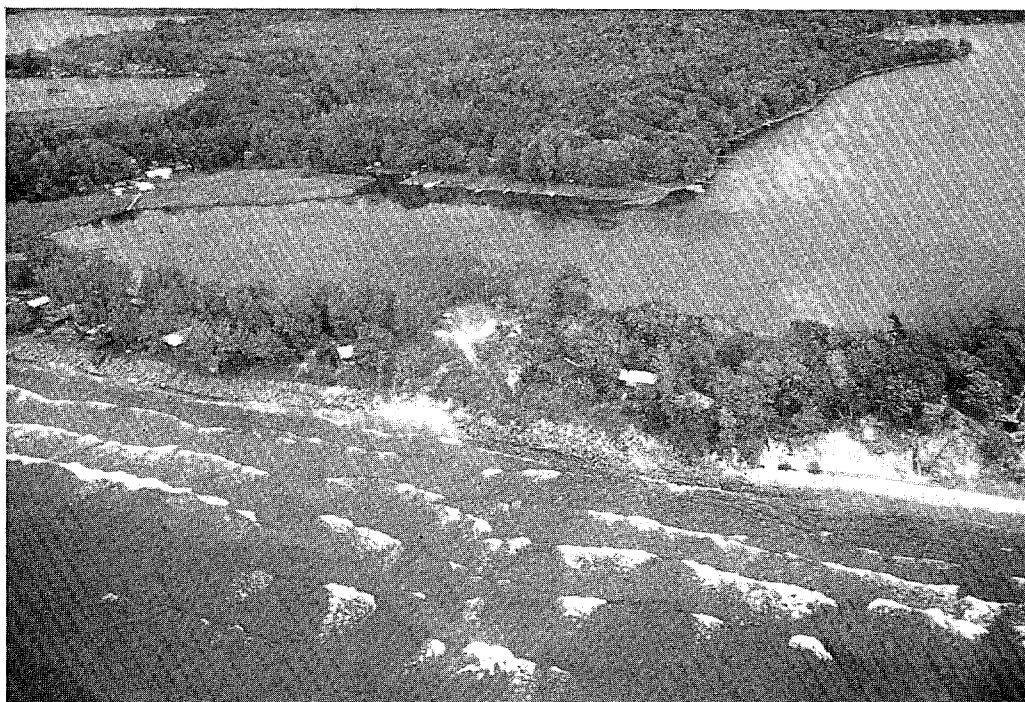


Figure 60: South Pond Barrier; Northern Part of South Pond in the Background.



Figure 61: Cobble Beach and Eroding Dune on South Pond Barrier.

a source of replenishment sand for the eroding dunes. (See Figure 61.) The small beach area that does appear at low water is composed of cobbles. The homes here are typically located near (some precariously near) the front edge of an eroding dune line that in some places has been armored heavily by rip rap.

Access to the homes on the southern part of the barrier and north of Rainbow Shores Road is from the south (not from the north through the Sandy Island Beach residential area described previously). The two roadways, one from the north and the other from the south, providing access to the homes on the South Pond barrier do not connect with each other and thus there is not a continuous roadway along the beach.

Part of the barrier here is quite low and narrow and would appear particularly vulnerable to overwash during severe storms and high water. (See Figure 62.) In one instance, a home site under construction can be seen in a leveled area adjacent to a dune formation that has not been graded.

Parts of the shore here have also been heavily armored with rip rap. Nine property owners have jointly constructed an extensive shore protection

project including rip rap on the dune face covered with top soil in an effort to halt erosion.

The Rainbow Shores camp site for recreational vehicles is located near the shoreline at the southern part of this management unit near Rainbow Shores Road, and a small, private swimming beach is maintained here. (See Figure 63.) Also found in this area is a home recently constructed on pilings within the State-designated wetland. This structure serves as a dramatic example of poor site location and the type of development practice that can have a potentially detrimental impact on natural wetlands values.

#### Summary of Management Concerns on the Sandy Pond Barrier:

*Blocking of access road by wind-blown sand from  
unauthorized dune grading*

*Potential for barrier overwash in low sections*

*High risk to shorefront properties from erosion  
hazard*

*Poor development practices detrimental to coastal  
resources*



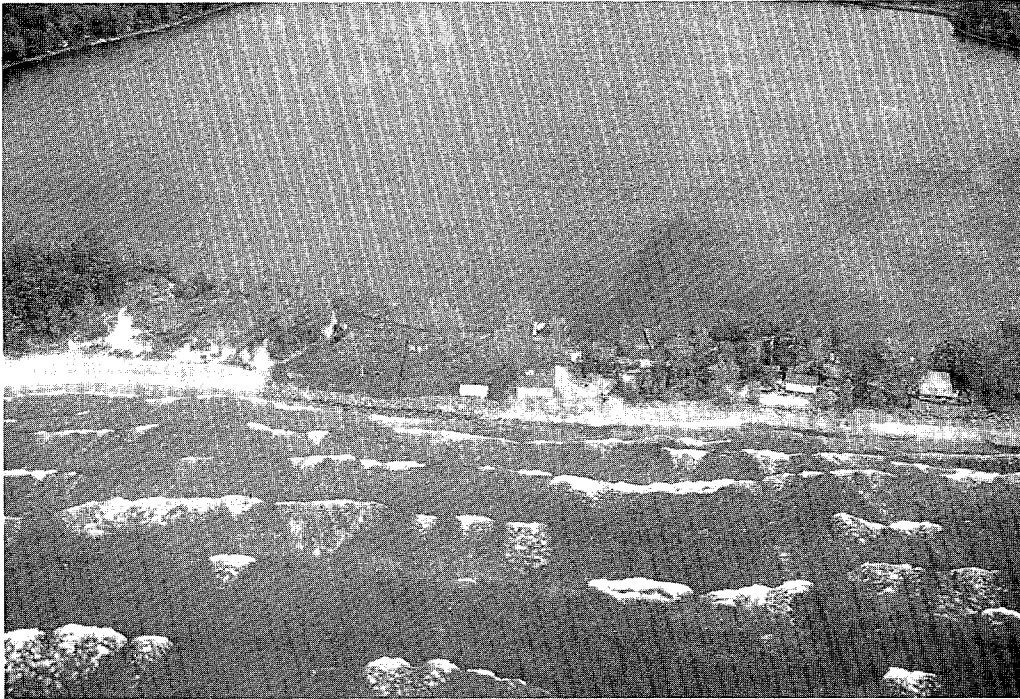


Figure 62: South Pond Barrier.



Figure 63: South Pond Wetland and Private Beach Looking Inland (East) Near Rainbow Shores Road.

## GUIDELINES FOR RESOURCE MANAGEMENT IN THE NORTH AND SOUTH SANDY PONDS RESOURCE AREA

Management guidelines for this resource area focus on preservation of the high "relict" dunes, protection of the remaining undeveloped, privately owned lands on the north and south spits and other concerns in the management units just described.

1. Special management attention should be directed toward protection of the "high dunes" on the north and south spits.

While the effects of high lake levels and other natural forces on the high dunes are to a large extent beyond human control, human disturbance of the high dunes can be influenced, and people should be discouraged from climbing on the exposed sand faces of these dunes. Local awareness of the unique history and vulnerability of the dunes should be increased. A special study to document the precise age of the dunes should be undertaken and the results used to support the historical significance of the dunes and the need for protection of these resources. As long as lake levels can be expected to rise again, measures such as sand fencing and vegetation plantings will prove ineffective on the steep sand faces of these dunes. If, however, lake levels were to remain low, then snowfencing and vegetation placed by volunteer groups could be established at the base of the steep dunes to slow natural erosion forces.

The Town of Sandy Creek should recognize the significance of the high dunes through a special Town resolution and establish special controls for resource protection in the barrier system (see Guideline No. 3 below).

2. Private efforts to stabilize dune formations with beachgrass plantings in residential areas should be encouraged.

Such efforts, as undertaken successfully by residents in the Renshaw Bay area, should be encouraged in other locations. The efforts of these private property owners should receive increased

attention as an example of the benefits of non-structural erosion control measures and of the awareness and informed actions of some shore-front property owners to stabilize the dunes. Property owners should be encouraged to seek technical assistance in planting such vegetation from the Oswego County Soil and Water Conservation District. A nursery for beachgrass should be established in the barrier system to provide plants that can be used by individual homeowners and others to help stabilize dune formations.

3. The large, undeveloped and privately owned sections of the north and south barrier spits should be maintained in an undeveloped, natural condition.

These areas, including the sand flats on both sides of the North Sandy Pond inlet, represent the last remaining privately owned, undeveloped and unprotected sections of the barrier system. As such, they should be protected from future development and should remain as natural areas to be used for limited recreational purposes and to serve as valuable natural communities supporting shorebirds and other wildlife species.

The most desirable approach to protecting the barrier spits is through measures that would be implemented by the Town of Sandy Creek and/or the private landowners. Special Town policies recognizing the recreational and natural values of these areas and the importance of their protection should be adopted. The Town should consider a variety of measures (see Guideline No. 4 on the following page) to protect the barrier spits, including restrictive development controls. Various land-owner options for protecting the spits from development should also be considered. Should the Town and/or the landowners choose not to pursue measures to protect the spits, another possibility for protecting these lands would be for the State of New York, acting through the DEC, to acquire the land.

4. **The Town of Sandy Creek should establish new requirements and regulations for guiding resource use and ensuring resource protection on private lands in the barrier system.**

In addition to the designation of a Critical Environmental Area (see page 29) which includes the barrier system, the Town should adopt other special land use controls specifically addressing the sand dunes and coastal barrier. The first step in the development of these controls should be the adoption of a special resolution to recognize the important natural values provided by the barrier system and the public interest in protecting these values.

The Town should consider the establishment of a special conservation district which would apply to the barrier system as well as the establishment of specific zoning/development controls, including performance standards or criteria that should be used in reviewing future development proposals that might affect the barrier system.

5. **More effective management controls should be implemented to guide recreational use of Sandy Island Beach and protect the natural environment in this area.**

The natural setting of Sandy Island Beach provides an opportunity for establishing an attractive recreational area that could serve to accommodate some of the use pressures directed toward the public lands in the barrier system. More effective management controls and improved enforcement of current use restrictions are needed, however, to protect the natural resources which provide this opportunity. Imposing these controls should be the responsibility of the private owner of the site.

Recognizing the difficulties associated with enforcing additional controls to guide or limit pedestrian access through the dunes in this area, the owners should seek assistance from such agencies as the Oswego County Soil and Water Conservation District, the St. Lawrence-Eastern Ontario Commission and others with regard to implementing such controls. More effective controls on ATV use are also required, including

a general prohibition of ATV use on beach property and guidelines to control limited passage of ATVs along the beach to the residential community to the north. More effective control of access through the beach gate and Town right-of-way should also be established.

Future development activities on this site should not be allowed to cause destabilization of sand dunes nor result in the removal of sand from the area. Efforts should be undertaken to stabilize the large dune blowout as described in Guideline No. 6 below.

6. **Efforts should be undertaken to stabilize the large dune blow-outs.**

Efforts to stabilize the blow-out on the north spit should initially concentrate on the placement of snowfencing and planting of shrubs near the beach. These measures could be established by volunteer groups supported by the Ontario Dune Coalition. Over the course of several years, additional stabilization measures of this type would be added and the stabilized area expanded progressively further back into the blow-out. A similar approach should be taken by the owners of Sandy Island Beach to stabilize the blow-out currently encroaching on the aquatic habitat and parking area on the North Pond side of the coastal barrier. Active efforts to stabilize the dunes in this area should also include the transport of sand from the interior of the blowout toward the beach and re-establishment of a primary dune just inland of the active beach area.

7. **Priority attention should be given to reducing the erosion risk on the South Sandy Pond barrier.**

Homes in the Sandy Island Beach and Rainbow Shores residential areas are particularly vulnerable to coastal erosion. The only options now available to protect many of these homes are structural measures and/or relocation of the existing cottages. Increased technical assistance should be provided to residents in this area regarding appropriate erosion control measures that can be implemented by groups of property owners. This assistance should come from such agencies as the Oswego County Soil and Water

Conservation District, New York Sea Grant and Department of State.

The Town of Sandy Creek should establish controls to limit or prohibit rebuilding of existing structures in the most vulnerable areas, should existing structures at risk be damaged beyond repair as a result of coastal storms and erosion.

8. Any future efforts to dredge and/or stabilize a navigation channel between North Pond and Lake Ontario should not affect the integrity of the coastal barrier system or have significant adverse effects on existing littoral transport conditions.

Appropriate actions should be carried out to maintain safe navigation conditions between North Pond and Lake Ontario. These actions, however, should not include the dredging of any new access channel through the barrier spits at North Pond.

Future decisions to improve and maintain safe navigation conditions in the existing North Pond inlet should be based on a number of considerations. Among these considerations are: the effect of an improved channel on stimulating new development (and associated environmental impacts) in the area surrounding the North and South Sandy Ponds; the effect of channel dredging on longshore sediment transport conditions; and the effect of currents and other littoral conditions in the inlet area on requirements for future maintenance dredging of any improved channel.

In evaluating the feasibility of possible channel improvements at North Pond, the Corps of Engineers should carefully consider the effects of such improvements on longshore sediment transport conditions. Channel improvements that would affect those transport conditions in a manner that results in accelerated erosion of the adjacent dune system should be avoided.

A long-term monitoring program to assess longshore sediment transport and inlet migration conditions should be established.

## CHAPTER SIX:

# DEER CREEK RESOURCE AREA

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*The Deer Creek Resource Area between South Pond and the Salmon River contains the southernmost of the coastal marshes protected by the Eastern Lake Ontario coastal barrier system.*

*This chapter contains a description of existing conditions and management concerns in the resource area. Also included are guidelines and recommendations for resource management. Four management units are identified:*

- *Barrier section extending south from Rainbow Shores Drive to northern entrance to Deer Creek Wildlife Management Area;*
  - *Deer Creek Wildlife Management Area;*
  - *Brennan Beach campground; and*
  - *Port Ontario Harbor of Refuge.*
- 



Deer Creek Marsh, "Plugged" Outlet of Deer Creek and Brennan Beach Commercial Campground.



## EXISTING CONDITIONS IN THE DEER CREEK RESOURCE AREA

The coastal barrier and associated wetlands in the Deer Creek Resource Area (see Figure 64) have been designated by the New York State Department of State as a Significant Coastal Fish and Wildlife Habitat encompassing some 1,200 acres.

The wetland area consists of two major sections bisected by an east-west extension of higher ground through which access is provided to the Brennan Beach campground. The northern portion of marsh is dominated by cattail and other emergent wetland vegetation. Deer Creek, a small, slow-moving, warmwater stream, flows through this northern area, and connects with Lake Ontario just north of Brennan Beach. (The Deer Creek outlet is semi-permanent and typically closes during periods of low flow.) The State water quality classification of Deer Creek is "C". The marsh and barrier north of the outlet were acquired by the State of New York in 1979 and now make up the Deer Creek Wildlife Management Area.

The southern marsh area is predominantly scrub-shrub and forested wetland, and is privately owned. All of the Deer Creek Marsh is densely vegetated, with less than 2% of the area being open water. With the exception of the Brennan Beach, land bordering the marsh is relatively undeveloped and includes deciduous forest, abandoned fields, agricultural lands and low density residential development. Sand mining operations were once carried out on the southern portion of the barrier.

Because of the large size, ecological diversity and relative lack of human disturbance associated with the Deer Creek Marsh, the marsh area, including both the State and privately owned sections, provides fish and wildlife habitat values of important significance in the eastern Lake Ontario region. Studies of the area have documented at least 55 species of breeding birds, 11 species of mammals, 6 species of reptiles and 6 species of amphibians using the wetland, beach and fringe areas. The marsh is a very productive nesting area for waterfowl and other marsh birds, including pied-billed grebe, green-backed heron, American bittern, least bittern,

mallard, black duck, blue-winged teal, wood duck, northern harrier, turkey vulture, Virginia rail, sora, common moorhen, black tern, belted kingfisher, marsh wren, common yellowthroat, red-winged blackbird and swamp sparrow. Sedge wrens have also been reported in Deer Creek Marsh, but breeding has not been documented since at least 1980. Concentrations of waterfowl use the area for feeding and nesting during spring and fall migrations, but the extent of their use is limited by the lack of open water areas. Deer Creek Marsh supports sizeable populations of several furbearer species, including muskrat, beaver, raccoon and mink. Other wildlife species occurring in the area include white-tailed deer, snapping turtle, northern water snake, bullfrog and wood frog.

Deer Creek supports a relatively small, but significant warmwater fish community, with at least 11 species documented. Resident species include brown bullhead, redbfin pickerel, northern pike, yellow perch and largemouth bass. The creek is also a locally important spawning area for Lake Ontario fish populations, such as alewife, smelt and brown bullhead. White sucker, smallmouth bass and rock bass occur in Deer Creek, but spawning generally occurs upstream from the marsh, in faster moving waters.

Four management units are identified on the barrier system: 1) the barrier section containing residential development extending south from Rainbow Shores Drive to the entrance to the Deer Creek Wildlife Management Area; 2) the barrier within the Deer Creek Wildlife Management Area; 3) the barrier at Brennan Beach commercial campground, and 4) Port Ontario Harbor of Refuge areas. The Port Ontario Harbor of Refuge at the mouth of the Salmon River is described in the context of this resource area because the Salmon River represents the southern boundary of the overall eastern Lake Ontario coastal barrier system.

### Rainbow Shores South Area

This section of the coastal barrier system contains no sand dune formations and consists of basically tillish and bluff type shoreline. (See Figure 65.) Residential development extends from the Rainbow

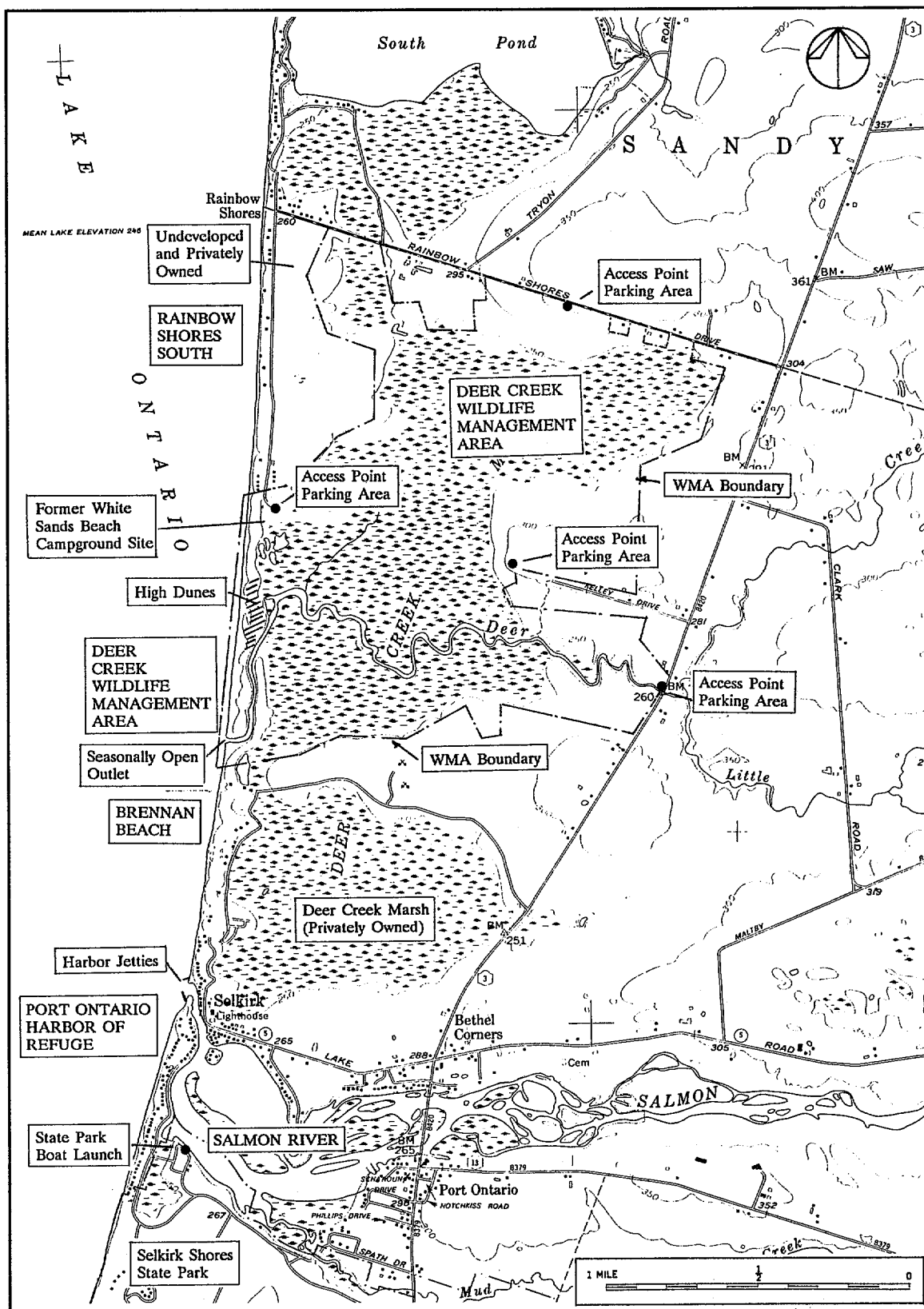


Figure 64: Deer Creek Resource Area.



Figure 65: Shoreline North of Deer Creek WMA.

Shores Campground area south to the northern entrance and parking area for the Deer Creek Wildlife Management Area. Also found in this area is the Rainbow Shores Hotel and Restaurant. This section does not contain the same type of dynamic beach and dune system found throughout most of the eastern Lake Ontario barrier system.

Since there is little beach to serve as a buffer and a source of replenishment sediment for the eroding bluff, the barrier shoreline here is particularly subject to erosion. The small beach area that does appear at low water is composed of cobbles. The front edge of the eroding bluff line is steadily advancing toward the existing homes. Ground water seeping from the wetland area to the east through the bluff to the beach also contributes to erosion of this section of shoreline.

The area east of the Deer Creek access road is currently undeveloped, although the private owner has indicated plans to develop a RV campsite and/or home sites in this area.

**Summary of Management Concerns  
in the Rainbow Shores South Area:**

*Erosion of shorefront properties*

*Potential impacts of possible future RV and/or home  
site development east of Rainbow Shores Drive*

### Deer Creek Wildlife Management Area

This area was acquired by the New York Department of Environmental Conservation in 1979 with funds available through the Environmental Quality Bond Act of 1972. The Wildlife Management Area is open for limited public use; including trapping and waterfowl hunting with proper permits. No person, however, may:

1. Swim in the area.
2. Build, maintain or use a fire in the area.
3. Camp or erect or maintain a camp, tent or structure of any kind in the area.
4. Injure, deface, disturb, or befoul any buildings, sign, equipment or other property in the area.
5. Remove, injure, or destroy any tree, flower, fern, shrub, rock or other plant or mineral in the area.
6. Deposit garbage, sewage, refuse, waste, fruits, vegetables, food stuffs, paper or other litter or obnoxious material in the area.
7. Park other than in designated parking areas in the area.
8. Walk or ride any domestic hoofed animal in the area.
9. Use motorized transportation of any kind in the area, including motorized boats in Deer Creek.
10. Fail to comply with regulatory signs posted by the Department of Environmental Conservation in the Area.
11. Fail to remove all personal property from the Area at the time of leaving, with the sole exception of the marked traps of a trapper operating with a valid permit.
12. Moor a boat overnight in the Area.

As in the two other barrier system Wildlife Management Areas (Black Pond and Lakeview Marsh), swimming, although a prohibited activity, is popular here as the restriction against swimming is not enforced. DEC Region 7 has assigned two Conservation Officers to the regional area within which the Wildlife Management Area is located, but enforcement activities related to sport fishing in this area often take up most these officers' time.

Pedestrian access to the Wildlife Management Area is possible through the Brennan Beach commercial

campground located to the south. Special permit conditions attached by the DEC to the State Pollutant Discharge Elimination System (SPDES) permit for a sewage collection and disposal system at Brennan Beach require, among other conditions, that the permittee shall:

- a) Place a sign along the Brennan Beach/New York State boundary on the beach stating that a person is leaving Brennan Beach and entering lands of New York State that have restricted public use.
- b) Give all campers and visitors a handout upon entering the campground. The handout will identify the lands to the north of the campground as New York State lands with restricted public use.

The abundance and diversity of fish and wildlife species in Deer Creek marsh provide many opportunities for human use of the area. Access to the marsh for recreational uses is available from four State access points in the Wildlife Management Area and from Brennan Beach. (See Figure 64.)

In 1983 and 1984 the DEC conducted a survey of the users of the wildlife management area. This survey found that those activities centered on the barrier beach (beachcombing, swimming) accounted for 70% of the total estimated use of the area. Beachcombing accounted for 46% of all use, and swimming (a prohibited activity) represented approximately 24% of the total public use of the area. Traditional uses (e.g., hunting, fishing, trapping) associated with the primary management focus of wildlife management areas amounted to only 16.5% of the total public use for the entire year. The survey found that those using the area return at a high rate for all but the winter months and that approximately 47% of the visitors surveyed originated from the Syracuse metropolitan area.

Parking for users of the area is available only at the four State access points and no off-road vehicle use is allowed beyond these points. Summer and spring use is concentrated on the beach and water access areas. During the fall, public use is equally distributed among all four access points. During the winter, opportunities for recreation, with the exception of walking on the beach, are almost totally absent. The DEC survey found that the primary use period is the summer (accounting for 83.8% of all

public use observed), followed by the spring, fall and winter. Recreational use of the natural barrier beach during the summer period amounted to 67.9% of all use for the entire year. The fall period accounted for only 6% of the total use at Deer Creek and traditional uses (dominated by fishing) made up only 40% of the total fall use.

The barrier beach and dune section of the wildlife management area was formerly known as White Sands Beach. This barrier section is bordered by shorefront residential development to the north and the Brennan Beach campground to the south. White Sands Beach was previously the site of a commercial campground facility. The beach and dunes here were being prepared for expanded campground development and the owners also prepared plans to dredge the Deer Creek outlet and construct a marina and harbor of refuge when the State decided to acquire the land by eminent domain in 1979 in an effort to protect its remaining natural values.

Pedestrian access to the barrier at Deer Creek WMA is from the north and south. A small parking lot is located at the northern edge near the former campground area. (See Figure 66.) Dune formations that once existed here were leveled for the

above-mentioned campground development and an asphalt path still leads southward into the swale area of the remaining dunes. (See Figure 67.) Pedestrian access to the barrier is also possible from the south, across the mouth of Deer Creek from Brennan Beach. The outlet of Deer Creek is typically blocked by sand deposits during the summer but is opened in the spring and fall by increased flow. Access to the barrier can also be obtained by canoe from Deer Creek.

Several distinct plant communities, ranging from dune colonizers to forest species and including 54 families of plants and at least one tree approximately 100 years old have been identified on the barrier. The most significant species are American beachgrass and wormwood (these are dune colonizers) and poison ivy, cottonwood and grape. The fourth group of high dunes in the barrier system is found here. (The other groups of high dunes are found in the Black Pond Resource Area and on the north and south spits at North Sandy Pond.) The high dunes are vegetated with mature trees that include oak, maple, poplar and ash. In the southern part of the area near the Deer Creek outlet the dune system is relatively wide and the creek cuts a north-south channel through the dunes. (See Figure 68.)



Figure 66: Northern Boundary of Deer Creek WMA Near Parking Area, Looking South.



**Figure 67:** Pedestrian Pathway Leading into Dune Swale and Toward High Dune Area, Looking South.



**Figure 68:** Sand Dunes on Both Sides of Deer Creek Channel Near Channel Outlet Just North of Brennan Beach.



The barrier within the Deer Creek Wildlife Management Area has received a substantial amount of management attention in past years. Snowfencing has been employed in several locations in an effort to stabilize dunes and block pedestrian movements. (See Figure 69.) In 1980, a demonstration dune stabilization project using American beachgrass was established here through the joint efforts of the St. Lawrence-Eastern Ontario Commission, Oswego County Soil and Water Conservation District, New York State Department of Environmental Conservation (Region 7), New York Sea Grant Extension and the Youth Conservation Corps. Also, survey points were established across the barrier by the DEC in 1985 with the intention of monitoring yearly changes in barrier profile and migratory changes in the dune system. Such monitoring, however, has not been carried out.

In spite of these efforts, the barrier here—of all the areas in the barrier system—is perhaps most in need of immediate management attention. The dunes within the Wildlife Management Area are more impacted by recent and ongoing human use than the dunes found in the Black Pond and Lakeview WMAs. Impacts are caused by recreational users entering from the north and by campers from Brennan Beach entering from the south. The beach

along the northern part of the barrier consists primarily of cobbles. (See Figure 70.) The beach is also subject to erosion here and during periods of high water, waves hit directly on the dunes in some locations.

Pedestrian pathways have been worn throughout the dunes and the snowfencing established to halt erosion has been ineffectual in most instances. The fencing is being vandalized and used for firewood (snowfencing placed in the high dunes to block pedestrian paths has been ripped out) and some 500-800 feet of fencing must be replaced each year. In the southern portion of the barrier, cottonwoods are dying as a result of wind-caused erosion exposing the younger and most vigorous roots of these trees. Unauthorized ATV use in the fall of 1987 has further endangered the stability of the existing dune system.

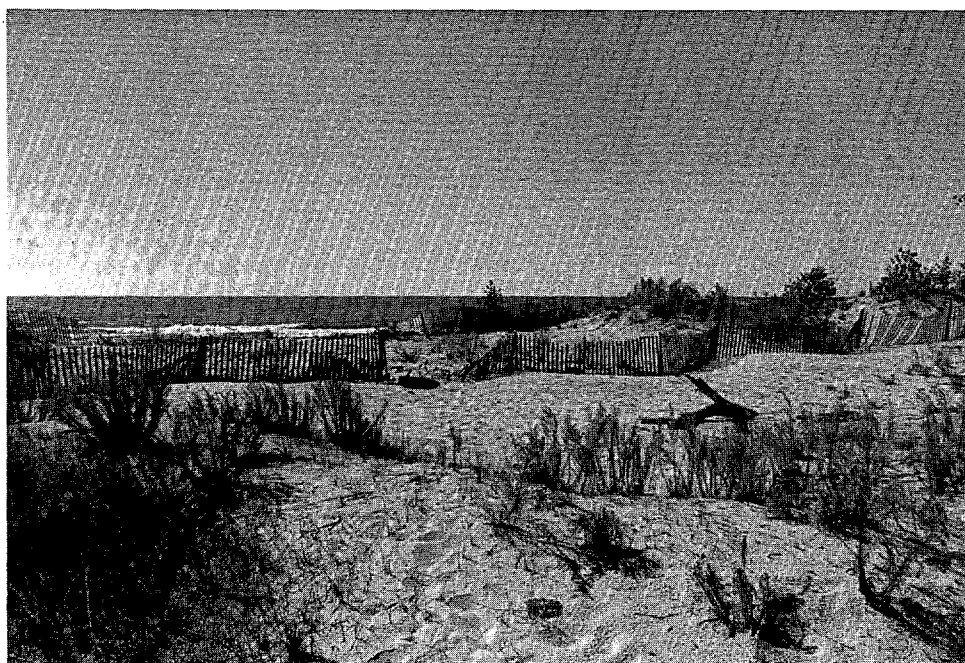


Figure 69: Snowfencing in Disturbed Dune Area at Deer Creek WMA.





Figure 70: Cobble Beach at Deer Creek WMA, Looking South.

**Summary of Management Concerns  
in the Deer Creek WMA:**

Unauthorized recreational use

Trespassing ATVs

Lack of enforcement of existing use regulations

Vandalism of dune stabilization measures

Human disturbances of sand dune vegetation and  
formations

Erosion of high dunes

Uncontrolled access into the WMA from Brennan  
Beach Campground

Loss of natural resources values caused by  
uncontrolled and unauthorized recreational activities

**Brennan Beach Campground**

Brennan Beach is the most intensively developed area on the eastern Lake Ontario coastal barrier. This area provides some 1,000 carefully organized campsites and ancillary facilities for RV campers between a point 1,000 feet north of the Salmon River and the Deer Creek Wildlife Management Area. (Several private homes are located just north of the Salmon River and south of the campground property in an area of cobble beach and little natural dune formation.) Camp sites providing concrete pads for campers and trailers are located on and near the beach and in wooded sections of the site. Approximately 400-500 of these sites are rented for the season (the season runs from May 1 to October 15), with some owners leaving their campers here year round. The remainder of the sites are available for transients.

Many campers are from the Syracuse metropolitan area; other campers from outside the State are attracted by the fishing opportunities in the eastern Lake Ontario region. No marina facilities are available at Brennan Beach, but some consideration has apparently been given to the development of such facilities nearby, possibly in the southern,

privately owned section of the Deer Creek Marsh.

The camping area was started in 1969. At that time, the beach was also open for non-camping, day use visitors. The day use beach operation was discontinued in 1979 but the beach remains the major site attraction for camping use.

Sand was historically mined from the barrier at Brennan Beach for use in foundry processes. These mining activities altered the natural sand dune environment, and when the camp sites were developed, further alteration took place as the higher dunes were removed and graded to allow for the maximum number of sites. (See Figure 71.) The campground brochure notes that: "People and sand dunes don't mix. Sand dunes can't stand large numbers of people. The vegetation is quickly destroyed and the sand blows away. We at Brennan Beach have opted for people." Efforts are being made, however, to stabilize the remaining sand formations for erosion control purposes. Snowfencing has been employed and walkovers from higher camp sites to the beach have been developed. A soils management plan for the Brennan Beach area has been established with assistance from the St. Lawrence-Eastern Ontario Commission and Oswego County Soil and Water Conservation District.

Over the past several years, more and more cobbles have appeared on the shoreline at Brennan Beach, particularly along the southern part of this shoreline. These cobbles reduce the attractiveness of the beach area for recreational activities. In the southern section toward the Port Ontario Harbor of Refuge, the beach now consists entirely of cobbles. Long term littoral transport and the extent and composition of the campground beach are likely to be affected by the large jetty just to the south at the mouth of the Salmon River. (See following description of Salmon River-Port Ontario Harbor of Refuge management unit.)

In an effort to protect the remaining sand beach and provide a walkway for beach users, a steel retaining wall has been placed in the beach to a depth of 6 feet along the length of the property. This wall helps support a concrete sidewalk that also runs along the length of the beach. (See Figure 72.) In the southern part of the property the beach has eroded close to the retaining wall.

During the summer of 1988, Brennan Beach campers participated in a volunteer dune restoration effort in the Deer Creek WMA. With support from DEC Region 7 and the Ontario Dune Coalition, volunteers repaired damaged snowfencing, placed new fencing,



Figure 71: Graded Campsite on Former High Dune Area.



Figure 72: Brennan Beach, Retaining Wall and Concrete Walkway, Looking South.

posted signs and fertilized sand dune vegetation.

**Summary of Management Concerns  
at Brennan Beach:**

*Continued erosion of the recreational beach*

*Poorly controlled access to the wildlife management area to the north*

*Potential effects of possible future recreation-related development on adjacent wetlands and natural resources values*

**Salmon River - Port Ontario Harbor of Refuge**

The Salmon River marks the southern boundary of the barrier system. As noted earlier, the natural shoreline environment south of the river is dramatically different from the environment to the north. South of the river, there is little sandy beach and the shore is characterized by a steeper, irregular offshore

and by narrow gravel and cobble pocket beaches. North of the river, the shoreline is characterized by the narrow sandy beaches, dune formations, protected wetlands and shallow ponds which characterize the eastern Lake Ontario barrier system.

The Salmon River is one of the largest coldwater tributaries of Lake Ontario and provides valuable habitat for many species of fish and wildlife. The river is a focal point of the State's efforts to re-establish and promote the region's fishing industry. These efforts have contributed greatly, during the last decade, to the establishment of a multi-million dollar sport fishing industry along the eastern shore of the lake. The Salmon River and its tributaries provide one of the top salmonid fisheries in the northeastern U.S. Out-of-state as well as State residents are attracted to the river because of the fishing opportunities. Historically, the Salmon River had the largest Atlantic salmon concentrations of all the tributaries to Lake Ontario.

The entire river channel and associated wetlands extending approximately 16 miles upstream from the mouth of the river have been designated by the New York State Department of State as a Significant Coastal Fish and Wildlife Habitat. Each year, from

late August through December, large concentrations of coho and chinook salmon and brown trout migrate from Lake Ontario into the river to spawn. In addition, steelhead (lake-run rainbow trout) migrate into the river in early December and between late February and April. The salmonid concentrations in the Salmon River are the result of an ongoing effort by the DEC to restore the Great Lakes salmonid fishery through stocking. The DEC's Salmon River Fish Hatchery provides all of the coho and chinook salmon released into the State's Great Lakes waters.

At its mouth, the river's natural controlling depth was about one foot (prior to construction of the federal navigation channel as described below) during normal flow of about 1,500 cubic feet per second (cfs), but upstream for about one mile the depths vary up to 15 feet. The width of the navigable portion of the river varies from about 100 feet to 500 feet, except at the mouth where the width is less than 100 feet. Flow in the river is regulated by a power dam located about 17 miles upstream. There is little if any silting in the river channel because of the relatively flat stream gradient and controlled flow. Water quality classification of the river is "C".

A marshy embayment of some 300 acres is found just upstream from the river's mouth and contains extensive beds of emergent vegetation which contribute to the maintenance of fish populations in the area and serve as valuable wildlife habitat. (See Figure 73.) The embayment is separated from the lake by a barrier formation nearly 1/2 mile long that averages 400 feet in width and rises 15-20 feet above lake level.

Much of the land bordering the river is privately owned except for Selkirk Shores State Park on the south side of the river mouth. Considerable shoreline residential development has occurred near the river mouth.

The relatively few boating facilities on the Salmon River accommodate mainly fishermen. There are four launching ramps within one mile of the river mouth with one launching ramp located at Selkirk Shores State Park on the south bank.

The mouth of the river is the site of the Corps of Engineers' Port Ontario Harbor of Refuge Project. (See Figure 74.) This project is intended to provide a refuge for cruising craft along the eastern shoreline of Lake Ontario and for the increasing number of sportfishermen attracted to the area. Prior to



Figure 73: Marshy Embayment Near Salmon River Mouth.



Figure 74: Salmon River Mouth and Corps of Engineers Jetty.

completion of this project, no suitable sheltered waters for small vessels existed between Oswego Harbor to the southwest and the Henderson Bay-Sacketts Harbor area to the north.

Harbor improvements include a 1,350 foot long jetty with a crest elevation of 10 feet above low water on the south side of the river and a 340 foot long jetty with a crest elevation of 9.5 feet on the north side. The jetties are of rubblemound construction with quarry stone armor. A 200 year recurrence interval for the combination of water level and wave height was used for the structural design of the jetties.

In addition, two navigation channels are provided. An entrance channel generally 100 feet wide originates in Lake Ontario, passes between the jetties and extends up the river for about 1,200 feet. The entrance channel then connects with a 450 foot long river channel 85 feet wide providing access to the deeper water in the lower Salmon River. The entrance channel was dredged to a depth of 8 feet below low water and the river channel to a six foot depth.

The Corps of Engineers recognizes that the jetties could have some long term effects on the longshore

sediment transport system present along the lake-shore at the mouth of the river. The Corps expected that some trapping of sediments was likely to occur to the south of the south breakwater and some erosion or sediment starvation could occur directly to the north of the north breakwater.

A sand by-passing pipe originally incorporated in the project design has been deleted from the current project. As originally envisioned, the by-passing system would have been capable of handling material with a maximum dimension of 3 inches. Many cobblestones found in the area, however, exceed a 6 inch dimension and would not have been able to pass through the pipe or would have caused excessive abrasive action and rapid deterioration of the pipe. It was determined that if clogging of the by-pass pipe did not occur on first use, settlement of material within the pipe would eventually render the pipe useless.

As a result, a permanent installation for sand by-passing has not been provided. The Corps of Engineers, however, has indicated that temporary by-passing of trapped material will be undertaken on an as-needed basis through mechanical dredging, periodic dredging during harbor maintenance or



use of a portable jet pump. Thus, the Corps of Engineers proposes that the essentially long-term interruption of littoral drift can be mitigated when necessary and reduced to a short term effect.

Maintenance of the project, including the jetties and channels, is the responsibility of the federal government.

**Summary of Management Concerns  
at the Salmon River Mouth:**

*Increased development pressures  
and potential  
impacts on natural resource values*

*Potential adverse effects of harbor jetties  
on longshore sediment transport*

**GUIDELINES FOR RESOURCE  
MANAGEMENT IN THE DEER CREEK  
RESOURCE AREA**

Management recommendations in this resource area focus on the protection of natural resource values currently being degraded in the Deer Creek Wildlife Management Area.

1. Immediate special management attention should be directed toward protection of the "high dunes" contained in the Deer Creek Wildlife Management Area.

The high dune area should be designated in policies adopted by the DEC as a "preservation" area to remain in its natural condition. Recreational uses and activities should be prohibited in this area. To aid in the protection of this area, the asphalt path which currently leads from the WMA's northern entrance toward the high dunes should be removed so as not to encourage pedestrian movement toward the high dunes.

2. A detailed plan to guide use and management of the Deer Creek Wildlife Management Area should be prepared by the DEC.

This plan should identify areas for concentrated recreational use and areas (such as in the high dunes) for the preservation of natural conditions. The management plan should specifically address the coastal barrier and sand dune portion of the WMA in addition to the wetland portion. The plan should also include appropriate measures to restrict access to the WMA from Brennan Beach. The plan should address each of the guidelines that follow.

3. A program for stabilizing eroding sand dunes in the WMA should be established.

This program should include identification of appropriate stabilization measures such as vegetation plantings and snowfencing. Priority areas for stabilization measures should be identified, including areas in need of immediate management activities. Any dune stabilization program, however, must be developed in conjunction with an expanded monitoring and enforcement program. Yearly changes in dune system profile and migration of the dune system should be monitored on a yearly basis by the DEC.

4. The feasibility of designating a special recreational use area within a relatively small section of the WMA near the northern entrance should be carefully evaluated.

It may be feasible and desirable, in order to best accommodate use pressures, to designate the northernmost section of the coastal barrier within the wildlife management area as a special recreational use area. This designation might allow for more concentrated and active recreational activities by visitors to the WMA, but these activities would take place in a clearly defined and carefully managed section of the WMA. Recreational activities would be focused in the area previously impacted by the campground development work that took place prior to State acquisition.

Authorization for more active recreational use

of this area would require revision of the current rules and regulations governing use of this section of the WMA. Within this area, current DEC prohibitions against swimming and picnicking might be lifted, for example.

Authorization for expanded recreational use here, however, would have to be balanced by the establishment of requirements for increased protection of natural areas in the remainder of the WMA. (See Guideline No. 5.) Designating a special recreational use area will also require careful monitoring and control of activities. If this designation is judged to be feasible, appropriate methods for ensuring effective management of the area, including special management controls and regulations, should be developed by the DEC.

Along with more active recreational use, additional facilities and structures such as the dune walkover structures described in Guideline No. 6 below should be included.

5. Along with designation of a special recreational use area in the northernmost section of the wildlife management area, more restrictive use controls should be considered for application in the remainder of the WMA.

The major part of the coastal barrier within the WMA should be designated as a protected natural beach area. All current use restrictions should remain in effect here, and more restrictive controls should also be considered, especially for the high dune section and with regard to impacts caused by the spill-over of campers from Brennan Beach. More restrictive use controls should be directed toward protection of the dune ecosystem from human disturbance and toward "balancing" any authorization of more active recreational use in the northernmost section of the WMA.

6. Dune walkover structures should be used to guide pedestrian access from the dune swale to the beach.

The major purpose of these structures should be to focus pedestrian movement onto designated

and restricted pathways through the dunes. This focusing of pedestrian movement should be to reduce the destruction of stabilizing vegetation caused by unrestricted access to the beach over the dune system. The walkover structures should be similar in design to the structure recently developed in the Southwick-Lakeview Resource Area. (See Chapter Four.) The structures should be elevated to accommodate natural dune migration, allowing for movement of windblown sand, growth of vegetation and ease of maintenance. These structures should only be built, however, under conditions of increased management attention and resource protection.

7. The DEC should evaluate the feasibility of establishing an environmental education center at the wildlife management area.

The purpose of this center, to include a classroom facility and educational exhibits, would be to increase public understanding and awareness of barrier system resources and to establish a DEC management presence that would serve to discourage unauthorized activities.

8. Monitoring activities and enforcement of existing regulations for resource use and protection should be improved.

It is clear that the designation of a special recreational use area and imposition of more restrictive use controls will require increased monitoring and enforcement capabilities on the part of the DEC. In addition to the enforcement of any new use controls, the DEC should attach a higher priority to enforcement of existing regulations against all activities that may disturb the sand dune ecosystem in the WMA. A Conservation Officer should be assigned to patrol the area at least during those holiday periods and summer weekends when recreational use is highest. Initial visits should be to inform users of existing regulations; citations for violations should be issued on subsequent patrols.



9. New and improved signs should be placed to guide resource protection and public use.

New signs should replace current DEC signs listing prohibited activities in the WMA. The signs should identify special, protected resource areas as well as areas where limited recreational activities may take place. Signs providing information on special resource areas and use restrictions on the coastal barrier should also be placed at the small boat launching sites providing access to the WMA.

10. Long term management options that would involve major changes in the current management or ownership status of the wildlife management area should be considered.

Such options should be considered if resource values currently being degraded by unauthorized activities can not be adequately protected through implementation of the previous recommendations alone. Two options to consider are: 1) the development of a cooperative management arrangement between the DEC and the State Office of Parks, Recreation and Historic Preservation; and 2) transfer of ownership of a portion of the wildlife management area from the DEC to OPRHP. Under the first option, the DEC would retain ownership of the entire WMA but OPRHP's Central New York State Park, Recreation and Historic Preservation Commission, would manage the non-wetland portion of the barrier. This would allow for managed active recreational use of the beach and protection of the dunes by on-site personnel. Under the second option, the OPRHP would assume title as well as active management of the non-wetland portion, including the beach and sand dunes, to allow recreational use of the beach and protection of the sand dunes. Under both options, the area could be operated as a closely supervised day use extension of Selkirk Shores State Park.

Development of a supervised swimming beach at the Deer Creek WMA would help to accommodate some of the use pressures now directed toward the small and erodible beach area at Selkirk Shores State Park. Access into the area

and through the sand dunes would be tightly controlled. A fee would be collected for beach access from the north. Access from the south, through Brennan Beach, could be prohibited or controlled through collection of a fee, if possible.

All of the earlier recommendations would also remain pertinent to resource management in the area.

11. Brennan Beach is an appropriate location for continued intensive recreational use and development along with additional management controls.

Recreational facilities at Brennan Beach should continue to be maintained in a manner that serves to accommodate some of the use pressures directed toward the public lands in the barrier system. Brennan Beach is, however, the most intensively developed section of barrier beach in the entire barrier system and, by virtue of its close proximity to the Deer Creek Wildlife Management Area, is the source of intense and inappropriate uses within the WMA.

More effective management controls should be established to limit the movement of people from the campground to the wildlife management area.

Future development activities at Brennan Beach should be located within the current boundaries of the site and should not infringe on the adjacent Deer Creek wetland area not located within the wildlife management area.

The owners should continue to seek assistance from such agencies as the Oswego County Soil and Water Conservation District, New York Sea Grant and others with regard to implementing additional measures to stabilize remaining sand dune formations.

Continuing volunteer dune restoration efforts involving Brennan Beach campers should be encouraged and supported by the Ontario Dune Coalition and concerned agencies.

12. The Town of Richland should establish new requirements and regulations for guiding resource use and ensuring resource protection in the Port Ontario harbor area and the privately-owned Deer Creek marsh area.

The Town of Richland should designate the area at the mouth of the Salmon River as a Critical Environmental Area under authority provided by the State Environmental Quality Review Act. The Town should consider adopting special land use controls specifically addressing this area and the other privately owned sections of the barrier system, including that portion of the Deer Creek marsh not included in the Deer Creek WMA.

## CHAPTER SEVEN:

# SYSTEM-WIDE ISSUES AND MANAGEMENT OBJECTIVES

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*This chapter summarizes some basic issues or management concerns associated with existing conditions throughout the eastern Lake Ontario coastal barrier system. These issues and concerns are more general in nature than the area-specific management concerns that were described for each of the four major resource areas in Chapters Three through Six.*

*Also contained in this chapter are management objectives and recommendations that represent some possible approaches for responding to the system-wide issues and concerns. These objectives and recommendations are not necessarily tied to specific resource areas but are intended to guide management efforts throughout the barrier system, and should be considered in conjunction with the resource area guidelines presented in Chapters Three through Six.*

*System-wide issues and management objectives are presented in the following categories:*

- *Understanding barrier system dynamics and values;*
  - *Reducing human impacts on the barrier system; and*
  - *Managing the barrier system.*
-

## UNDERSTANDING BARRIER SYSTEM DYNAMICS AND VALUES

One of the basic purposes of undertaking the special study of the eastern Lake Ontario coastal barrier system was to identify needs for additional scientific research and to identify appropriate management practices that should be altered based on what is already known about the barrier system. The barrier system exists in a state of dynamic equilibrium and is constantly being shaped and modified by natural forces. There is currently much misunderstanding as well as a lack of information regarding these forces and their effects on the system.

■ The water level of Lake Ontario is subject to short and long-term fluctuations and the barrier system is especially vulnerable to the erosion impacts associated with high water levels.

The Lake Ontario water level is a major factor influencing shorefront erosion and sand dune formation in the barrier system. The relatively low levels recorded during 1987 and 1988 (see Figure 75) favored sand dune development and replenishment and reduced the rate of shorefront erosion. Significant differences in lake levels may occur from year to year and season to season, and any barrier system management decisions that do not take these fluctuating levels into account are likely to fail.

Continued high water levels would eventually dominate the barrier system, eliminating recreational opportunities, increasing erosion and property damage, and jeopardizing the integrity of the barrier and its protected embayments.

There has been much public debate over the extent to which Lake Ontario water levels can and should be controlled by the regulation of flow through man-made control structures in the St. Lawrence River. Many people believe that regulation can have an important effect on lake levels and doubt that the most critical factors affecting lake levels are such natural factors as precipitation over the entire Great Lakes basin. Those most affected by fluctuating water levels (residential property owners and marina operators, for example) have argued for increased regulation to lower or raise Lake Ontario water

levels in order to serve their particular interests.

Although recent experience indicates that regulation does affect the level of Lake Ontario (and therefore erosion rates in the barrier system), no definitive analysis has been conducted to determine the extent to which lake levels and the corresponding rate of erosion can be influenced by human control. The absence of a comprehensive analysis hinders the development of long-range barrier system management strategies.

- ***Management Objective:*** *Decisions regarding lake level regulations must take into consideration the effects of water level changes on barrier system erosion rates in order to protect the barrier system.*

*Additional study is necessary to determine the extent to which the regulation of flow in the St. Lawrence River can influence Lake Ontario water levels and erosion of the coastal barrier system. Current and recent lake level and shorefront conditions should be compared with historic conditions, prior to construction of the St. Lawrence Seaway, to help determine the extent to which regulation can contribute to reduced shorefront erosion rates and natural sand dune development and replenishment. The effects of increased regulation on components of the barrier system other than sand dunes (on wetlands, for example) should also be evaluated.*

- 
- **Sediment transport patterns affecting the barrier system are not well understood.**

Another key factor affecting sand dune preservation and replenishment is the nature of nearshore sediment transport patterns. Little quantitative data exists, however, with regard to the direction, quantity and sources of sediment transport in the eastern Lake Ontario region. In addition to longshore sediment transport, sediment appears to be transported in onshore-offshore directions and some



Figure 75: Exposed Beach at Low Water Conditions Near the Black Pond WMA.

sediment may also be introduced from tributaries flowing into the barrier system. The onshore-offshore movement appears to be the primary phenomenon currently affecting sand movement and distribution. Ice formations which gouge the shoreline and nearshore areas may also have an effect on the balance of sand in the system. One hypothesis is that the barrier system may be a "nodal" area with little net longshore movement of sediment taking place. The lack of knowledge regarding sediment transport patterns also hinders long range barrier system management strategies.

- **Management Objective:** *Fundamental research regarding coastal processes in the barrier system is needed.*

*Additional study is necessary to assess the direction, quantity and sources of sediment transport in order to more accurately project long-term trends in barrier system erosion and sand dune development and replenishment. The relative importance of longshore and onshore-offshore movement in barrier system development and replenishment should be addressed as well as the extent to which ice formations contribute to the move-*

*ment and distribution of sand. Major sources of sediment supply and the offshore boundary of the active sand distribution system should be identified.*

- **Little is known about the natural history of the relict sand dunes.**

In addition to the relatively poor understanding of the area's coastal processes, little is known about the natural history of the relict sand dunes. The four distinct areas of high sand dunes found in the barrier system (in the Black Pond, North and South Sandy Ponds and Deer Creek resource areas as described in Chapters Three, Five and Six, respectively) represent unique natural communities that provide rare natural resource values, contribute to the overall protective aspects of the barrier system and provide scenic and aesthetic qualities. The high dunes were formed thousands of years ago when lake levels were much lower, and can therefore be described as geologically significant relict dunes. The climatic and geomorphic conditions under which these high dunes

were formed no longer exist. If these dunes are destroyed, it will be impossible to regain the natural values which they now provide. The steep faces of the high dunes directly exposed to Lake Ontario are particularly subject to erosion, especially when lake levels are high. (See Figure 76.) In order to protect these natural formations it is necessary to better understand them.

- **Management Objective:** *Specific research and management attention should be directed toward the four relict dune areas.*

*Additional study should be carried out to more precisely analyze the origin and age of the high dunes. Field investigations may locate dune strata containing organic materials which could be analysed through carbon-14 dating to determine the actual age of the sand dunes.*

*Long-term preservation of the high dunes and associated natural values should receive priority management attention. Measures to protect these dunes should focus primarily on increasing public awareness of resource values and the potential impacts of human*

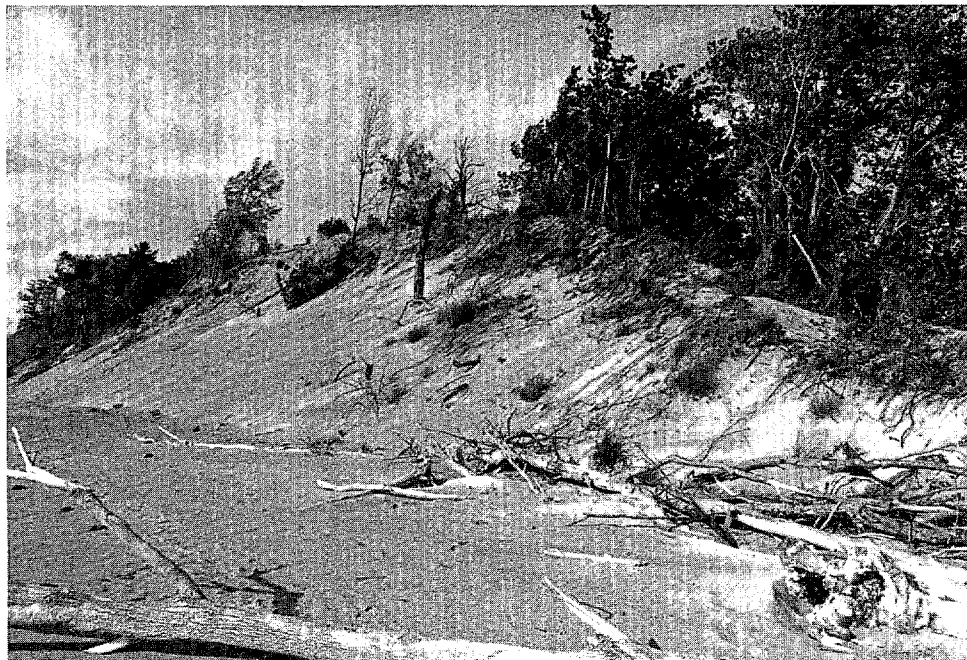
*activities, and on limiting pedestrian and vehicle access in order to stop direct destruction of the high dunes. Specific measures should be undertaken to prevent people from climbing on the exposed sand faces of the dunes.*

*The relict dunes should be considered for designation as National Natural Landmarks by the U.S. Department of the Interior.*

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- Lack of understanding of barrier system dynamics and values is contributing to degradation of the system.

Throughout the barrier system, property owners exhibit different attitudes and awareness regarding erosion control, development and natural resource protection. Some property owners are clearly not aware of, or not concerned with, the natural values provided by the barrier system. For example, some property owners have worked to stabilize existing dunes and have encouraged natural dune growth to provide a measure of shore protection; others have



**Figure 76:** Relict Dune on the North Spit Subject to Accelerated Erosion During Periods of High Lake Levels.

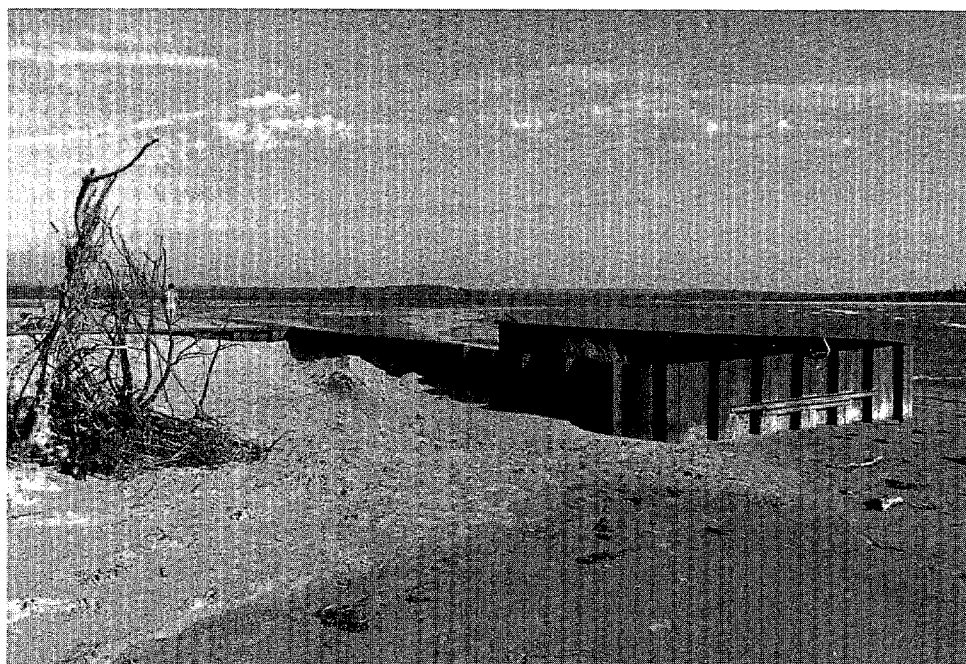


Figure 77: Remnants of Past Development on the Overwash Flat of the North Spit.

graded dune formations and have contributed in other ways to destabilization of the barrier system. In the past, the dynamic and fragile character of the dune formations and other barrier system resources has not been well recognized or understood by some property owners (see Figure 77) as well as by the government programs affecting the barrier system.

In addition to conflicting with coastal processes, human activities on the barrier beaches often conflict with shorebirds and other wildlife populations as well as with natural plant communities. In general, nesting and migrant shorebirds can not co-exist with intense recreational activities. Due to loss of habitat and disturbance of feeding and breeding activities, the Piping Plover (now an endangered species in New York) and the Common Tern (a threatened species) no longer nest in the eastern Lake Ontario barrier system. Human activities can also result in adverse impacts on plant community composition and structure, including destruction of rare species and the introduction of non-native species. Boating activity affecting barrier system wetlands can also disrupt natural communities.

Natural processes and resources are too often in conflict with human uses. Preserving the natural

values of the system will require a certain change in human values.

- ***Management Objective:*** *A strong conservation ethic has to become established among resource users, owners, managers and regulators in order to protect the coastal barrier system.*

*The first step in establishing a change in attitude and values is through appropriate educational efforts directed at increasing public awareness of the natural processes and values of the barrier system. The second step would involve active instruction designed to solve or prevent specific problems. This could lead to management efforts that are based on an understanding of natural processes and could also help to accomplish the objective of ensuring adequate and functional habitat for the system's various natural communities.*

*As an example, valuable shorebird habitat should be restored and protected. This will only take place, however, after the realization has occurred that balanced use between*



*recreation and wildlife cannot be achieved for all areas and at all times in the coastal barrier system. The most valuable habitat areas are in immediate need of active management that would include seasonal prohibitions on all recreational uses in selected shorebird nesting areas.*

## REDUCING HUMAN IMPACTS ON THE BARRIER SYSTEM

The barrier system is sensitive to human disturbances that can hasten and make more severe the effects of natural forces. In fact, most of the disturbance and resource damage taking place in the barrier system is caused not by storms and other natural processes, but by people.

■ **Human activities are a major cause of the destruction of barrier system resources.**

The sand dunes are particularly vulnerable to human disturbance. Walking over dunes, climbing on the dunes and driving motorized vehicles such as all-

terrain vehicles (ATVs) and four-wheel drive vehicles in dune areas damage fragile stabilizing vegetation and accelerate erosion, thereby lessening the natural protective functions that the dunes provide. Once destroyed, it may take years for plants to become re-established on the dunes.

The use of ATVs and four-wheel drive vehicles is one of the most damaging of human activities in the barrier system, causing impacts that may persist for many years. Although motorized vehicles are prohibited in the WMAs (and in all dune areas once the Coastal Erosion Hazard Areas Act takes effect), such activity does occur illegally in WMAs and elsewhere in the barrier system. (See Figure 78.) Winter snowmobile traffic can also cause destabilization by destroying dune vegetation.

In addition to destruction caused by walking and driving in dune areas, vandalism of protective measures (snowfencing, for example) intended to stabilize dune formations, renders these measures ineffective. Vandals have used snowfencing for firewood (see Figure 79), and in the process of tearing down the fencing, trampled stabilizing vegetation. In the WMAs, increased recreational use and unauthorized activities such as camping and climbing on the dunes



**Figure 78:** Trespassing ATV Trails on Private Land on the North Part of the South Spit at North Sandy Pond.



Figure 79: Remnants of Vandalized Snowfencing Used for Firewood at the Deer Creek WMA.

have contributed to degradation of the dune system.

Although some activities with the potential to impact the sand dunes are prohibited in the WMAs, these prohibitions are rarely enforced.

There is a lack of understanding regarding the magnitude of the effect of human activities on the barrier system.

- ***Management Objective:*** In order to maintain the barrier system's natural protective and resource values, immediate steps should be taken to halt destructive human activities.

Measures designed to reduce human impacts are needed on at least three levels. The first is improving public awareness of the regulations applicable to resource use and protection, including the prohibition of motorized vehicles in any dune area on State land or erosion hazard area mapped under the Coastal Erosion Hazard Areas Act. This effort should be coupled with improved enforcement of resource protection regulations and clarification of permitted uses. Second, stiffer penalties should be imposed

for violations. Prosecution of those caught vandalizing dune stabilization measures should be to the fullest extent of the law. Vehicles used illegally should be confiscated. Fines should be imposed and public service to conduct dune restoration projects should be required of violators.

Finally, positive human activities associated with the establishment of dune stabilization measures, for example, should be encouraged. This would include planting stabilizing vegetation, repairing dune blowouts with snowfencing and other erosion control materials, monitoring activities affecting the barrier system and generally supporting resource management initiatives. In existing areas of disturbance on public and private lands, and prior to further development, dune walkover structures should be constructed to protect sand dunes and stabilizing vegetation from human disturbance. (See Figures 80 and 81.)

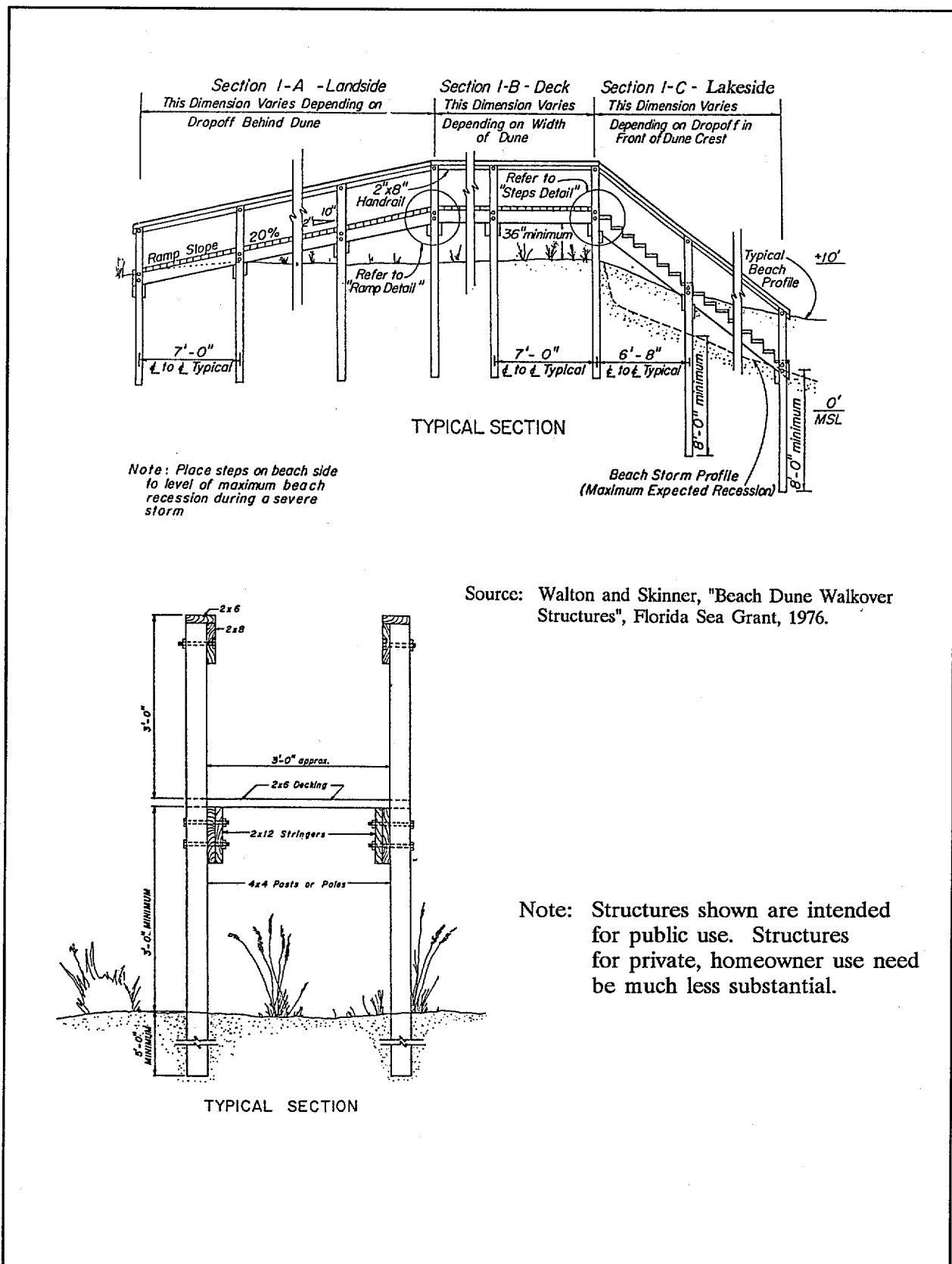


Figure 80: Guidelines For Dune Walkover Structures.

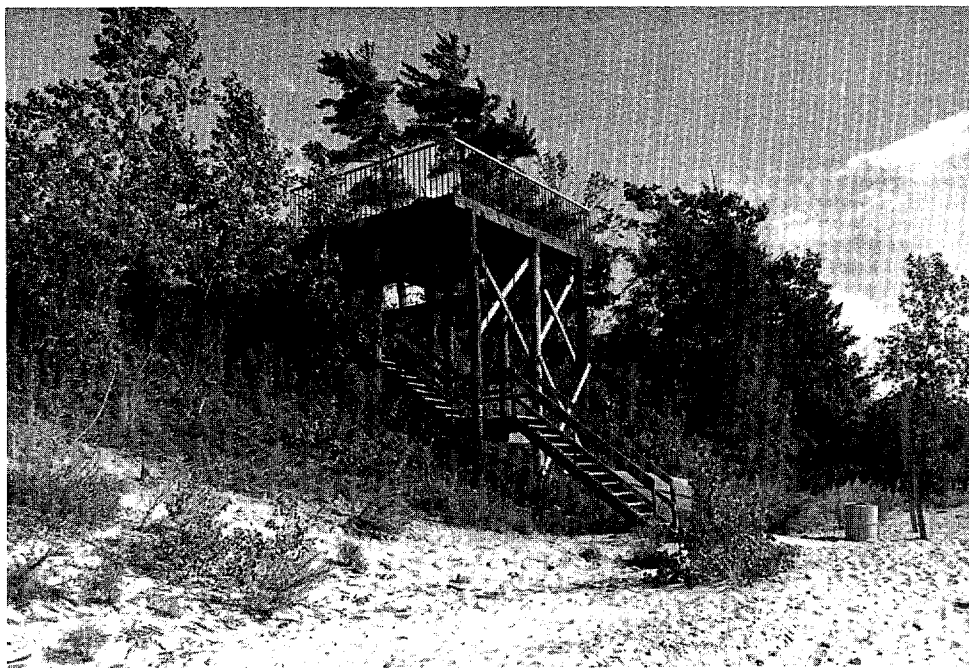


Figure 81: Dune Walkover and Beach Observation Structure at Brennan Beach.

■ The natural protective functions of the barrier are diminished by structural approaches to shoreline stabilization and erosion control.

The barrier beaches and sand dunes protect wetlands, ponds and the mainland shoreline from flood and erosion impacts. The barrier system is sensitive to natural disturbances and exist in a natural state of dynamic equilibrium. The barrier has been, and continues to be, shaped and modified by winds, waves, currents, ice and other natural forces. (See Figure 82.) The natural erosion and migration rates of some sections of the barrier system are high.

As a direct result of the dynamic nature of the barrier system, some of its developed sections are currently more affected by erosion and at higher risk than others. Throughout the system, individuals and groups of property owners have established structural works such as seawalls, riprap and revetment structures to protect their property from erosion. (See Figure 83.) Although some of these structural approaches have been effective in the short-term, in the long-term these structural measures may result in accelerated erosion on adjacent properties and cause other adverse impacts. Re-

source management approaches should recognize the need to allow the barrier system to respond to natural forces in order to provide natural flood and erosion protection.

- ***Management Objective:*** *Nonstructural measures to control erosion should be used as alternatives to structural or engineered approaches that accelerate beach loss, erode adjacent land and lead to diminished function of the barrier.*

*Natural forces should be allowed to continue to shape and modify the overall barrier system. Structural measures intended to fortify large portions of the shoreline against the effects of natural forces should not be established.*

*Erosion control structures intended to "fortify" the shoreline should not be constructed except in those instances where 1) no other reasonable alternative exists for protecting existing development, and 2) the structures employed do not result in significant adverse impacts on adjacent properties and natural resources.*



**Figure 82:** Trees Felled by Previous High Water Conditions on the North Spit at North Sandy Pond.



**Figure 83:** Erosion Control Structure in the Southern Part of the Coastal Barrier System.



*Shoreline fortification measures (as opposed to nonstructural erosion control measures) should not be established on State-owned land in the barrier system. In addition, nonstructural alternatives to the use of seawalls, breakwaters, jetties, groins and other structural erosion control measures should be used by waterfront property owners.*

*Nonstructural erosion control measures should be carried out prior to such time as these measures may actually be needed to protect property.*

*Appropriate nonstructural erosion control and shore protection measures for application in the barrier system include the enactment of restrictive land use controls, moving imperiled structures, planting stabilizing vegetation and placement of snowfencing. (See Figures 84 and 85.)*

*A beach grass nursery should be established to serve as a source of plants (indigenous to the eastern Lake Ontario region) that can be used to help stabilize sand dunes on private*

*and public lands.*

*Any structural measures deemed to be the only alternative available to protect individual properties should not be developed independently, but should also incorporate measures to protect adjacent properties from the resulting increases in erosion.*

*As a condition of authorization to construct structural erosion control measures, property owners should also be required to undertake nonstructural measures including the planting and protection of dune stabilizing vegetation.*

*Government agencies should continue to provide technical assistance regarding appropriate erosion control measures to shorefront property owners.*



**Figure 84:** Snowfencing in the Foredune Area at The Nature Conservancy's El Dorado Beach Preserve.



Figure 85: Site of Demonstration Dune Stabilization Project Using American Beachgrass at the Deer Creek WMA.

■ **Current development activities and practices are contributing to barrier system degradation.**

In addition to human misuse of barrier system resources, development on the barrier, including seasonal and year-round homes, can directly or indirectly damage the system. In turn, residential development is vulnerable to the direct effects of storms and high water which have caused significant erosion and property damage in the past. The effects of human use are particularly devastating, since the barrier system is naturally vulnerable to flooding and erosion impacts because of its direct exposure to wind and waves off the lake, its inherent instability and its relatively low-lying topography.

While many of the existing residential areas are fully developed with seasonal and year-round homes, there remain opportunities for additional residential development in privately owned, undeveloped areas. Future development activities in the commercial recreation and campground areas may also have adverse effects on barrier system resources. Poor site preparation and other inadequate development practices on privately owned lands have resulted in dune destabilization with associated negative effects

on adjacent properties and natural values. Improper construction and placement of septic systems is an example of another development-related condition that can contribute to adverse impacts on natural values by causing erosion, groundwater pollution and public health problems.

- ***Management Objective: Development in the barrier system should be undertaken in a manner that recognizes the natural vulnerability of the system and in locations suitable for supporting this development without adverse impacts on natural values and processes occurring.***

*Future development proposals should be carefully reviewed for potential impacts on barrier system resources. Proposals with the potential for negative impacts should be modified or denied.*

*Public awareness of appropriate development practices should be increased, along with improved monitoring and enforcement of existing wetland, building, and sanitary code regulations.*



*Structural erosion control measures should not be established to protect or promote future development in the barrier system.*

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## MANAGING THE COASTAL BARRIER SYSTEM

The coastal barrier system has been significantly altered by both natural forces and man's activities. This system, however, contains the least altered and most impressive barrier system resources in New York State. The value of these resources to the local residents, and to the citizens of New York, is priceless. Although the opportunity exists now to protect this resource, if action is not taken, today's opportunity may someday be a past memory.

■ Some individual components of the barrier system are currently being managed to a certain extent, but management efforts do not address or recognize the barrier system as a single integrated resource.

A key issue with regard to the protection of natural values concerns the capacity of the natural resources in the barrier system to accommodate increased human use and development without being damaged to the extent that important natural values are lost. Some sections of the barrier system are more sensitive to human disturbance than others, and some sections have a greater capacity to accommodate use and development. Resource carrying capacity can also be seen to vary on a seasonal basis. During shorebird nesting periods, for example, resource carrying capacity for recreational activities is significantly reduced.

With respect to use of State-owned lands, particularly the wildlife management areas, there is some sentiment that because the areas were purchased with public funds they should be open to public use with fewer restrictions. This attitude (along with lack of enforcement of existing DEC regulations) contributes to unauthorized activities such as swimming and picnicking in the WMAs. These uses can be planned so that they cause little harm, but unfortunately are

often accompanied by other activities that damage the sand dunes or eliminate wildlife use of the beach. The currently posted DEC signs listing a number of prohibitions that are not enforced do not represent a valuable approach to resource management.

- ***Management Objective:*** *Recreation and development activities in the barrier system should be planned and undertaken in a manner consistent with the capability of natural resources to accommodate these activities without significant reductions in natural resource values occurring.*

*Within the barrier system, "management units" should be designated to focus attention on specific geographic areas for which specific policies and management objectives can be implemented. Within the management units, areas can be identified that: a) should remain in their natural condition (preservation areas); b) can accommodate certain uses but not others (conservation areas); and c) are most suitable for human use (activity areas).*

*The WMAs are ideal management units for the designation of these types of use areas. This would require that fewer restrictions be placed in certain sections of the WMAs that can accommodate human use without degradation of natural resource values occurring, while the most valuable wildlife habitat in the WMAs would be placed under more restrictive controls in order to best achieve barrier system management objectives.*

*New and improved signs that reflect the outcome of this approach should be used to identify special preservation areas, conservation areas with limited use and more intensively used recreation areas.*

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- There is little local control of private uses and activities affecting the barrier system.

The barrier system is located in a relatively remote section of the State and in an area of extremely harsh winter climate. As a result, the region was previously not subject to the same sort of development pressures as other coastal regions of the State, and economic development objectives have been of primary concern to the local communities.

In recent years, however, development and use pressures have increased and have given rise to increased management concerns. Current development pressures are associated with: 1) growth and promotion of the eastern Lake Ontario sport fishery based in large part on the DEC salmonid program; 2) the U.S. Army's Fort Drum expansion plans; and 3) the New York Seaway Trail promotion program. Development pressures, particularly those related to second home development, public access and recreational use, are expected to continue.

Although current development pressures and the effects of the DEC salmonid program have highlighted the importance of environmental protection as well as economic development objectives, there is substantial public support for continued growth and development. Public concerns regarding the enactment and enforcement of both local and State land use controls have been expressed in the three communities with jurisdiction within the barrier system. In the past, there has been much public sentiment in opposition to increased local land use controls. This opposition, for example, has defeated past proposals to establish zoning regulations in the Town of Sandy Creek, and concern over increased regulation of private land has also led to some misinterpretation and misunderstanding of State and federal regulations controlling land and water uses. The basis of this opposition is the perception that land use controls and environmental regulations are impediments to economic growth.

Economic growth, however, is resulting in development that is needlessly altering the dune system to the extent that the basis for the economic growth, the region's natural coastal resources, is being degraded.

- ***Management Objective:** In response to development pressures and practices, local plans as well as zoning and land use controls should be directed toward achieving a balance between economic development and the protection of valuable and sensitive natural resources.*

*The towns should adopt special resolutions recognizing the values as well as the sensitivity of barrier system resources. The towns should also incorporate special land use policies and plans directed toward the barrier system into existing or future town-wide Master Plans.*

*Following the adoption of land use policies and plans, the towns should provide added protection to the barrier system by adopting appropriate zoning and other land use controls.*

*While town zoning and other land use controls should be established on a town-wide basis, special "overlay" zoning districts can also be applied over the underlying zoning districts in the barrier system.*

*In addition to zoning requirements that could limit the types of uses permitted in the barrier system, other special regulations can also be applied to the protection of barrier system resources, including site plan review and subdivision approval requirements.*

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- Current laws and regulations that should serve to protect barrier system resources are not being effectively implemented and strictly enforced.

Development controls, review processes and regulations intended to guide development and minimize or eliminate environmental impacts are established and carried out by local, State and federal agencies. Nevertheless, the barrier system has been, and continues to be, negatively impacted by human uses

and development activities. The effectiveness of these development controls and review processes is influenced by several important factors, including: the adequacy of available information on which to base review decisions; the ability to monitor and inspect development to ensure compliance with permit conditions; and local awareness (or lack of awareness) of types and sources of technical assistance to aid in the review process.

More importantly, the effectiveness of existing regulations and requirements depends on the ability to adequately enforce these regulations. A lack of enforcement of existing regulations and requirements, on both State-owned and privately owned land, currently exists. Key factors affecting enforcement capabilities are the availability of personnel, the commitment of personnel and the priority attached to enforcement by the different agencies charged with this responsibility.

Local enforcement is influenced by the fact that the local boards charged with the review of development proposals affecting the barrier system are volunteer boards with little if any support staff, and available inspectors are often overburdened with monitoring and enforcement responsibilities.

On State-owned lands, particularly the wildlife management areas, existing prohibitions against swimming, picnicking and disturbance of dune vegetation are often not enforced because of the lack of availability of Conservation Officers to adequately patrol the areas.

Given the significant natural values provided by the barrier system and the sensitivity of the system to both human and natural impacts, concern has been expressed that existing regulations may not be adequate for protecting the barrier system in light of new and increasing development pressures.

- ***Management Objective:*** *Decisions made under existing laws and the enforcement of existing regulations need to be improved at the local, State and federal government levels.*

- ***Management Objective:*** *In addition to increasing the effectiveness of existing laws, new laws and regulations directed at the protection of the barrier system and its resources are needed.*

*Development proposals affecting the barrier system should be given special attention in existing development review and permitting programs.*

*One obvious mechanism available to achieve this is the State Environmental Quality Review Act (SEQRA) process. In addition to those agencies required to participate in this process, other interested parties with valuable information to contribute as well as the general public should be encouraged to participate in the SEQRA process.*

*Decisions can be best made when necessary information is readily available. Town boards (and regulatory agencies at all levels of government) should seek technical assistance available from the county planning boards, environmental management councils and St. Lawrence-Eastern Ontario Commission and from other agencies such as the Department of State and the DEC, as appropriate, in the review of development proposals affecting the barrier system.*

*State agencies and town boards should make use of all existing opportunities and authorizing legislation to ensure protection of the resource values provided by the barrier system. Management efforts should include: 1) the designation of additional Critical Environmental Areas; 2) the establishment of additional town land use and/or zoning requirements; 3) the preparation of specific management plans for State-owned parcels of land; and 4) the initiation and implementation of special planning programs, including town Master Plans and Local Waterfront Revitalization Programs.*

*One of the most promising avenues of protection for the dune system is the State Coastal Erosion Hazard Areas Act (CEHAA). Under*

the CEHAA, erosion hazard areas have been mapped throughout the barrier system and the State has approved final regulations for implementing the Act. Final erosion hazard maps for the towns of Richland, Sandy Creek and Ellisburg in the barrier system were filed in May of 1988 and State regulations for implementing the Act have been adopted by the DEC. Under the Act, towns, cities and villages are given first opportunity to regulate erosion hazard areas within their jurisdiction by enacting local erosion management ordinances approved by the DEC. If local governments relinquish jurisdiction the opportunity is passed on to the county. If the county similarly relinquishes jurisdiction, the DEC must regulate erosion hazard areas. The Town of Ellisburg will most likely assume responsibility for implementing the Act; the towns of Richland and Sandy Creek, along with Oswego County, will likely defer implementation to the DEC.

Whether the towns or the State assume the responsibility for implementing the CEHAA, the regulatory restrictions, including prohibitions on foot traffic that causes dune damage, prohibitions on vehicular traffic in dune areas, and requirements for elevated dune walkovers, should be rigorously enforced to protect the dune system from human disturbance.

Enforcement of the CEHAA should include efforts to maintain current maps of the changing shoreline so that applicability of the law is as accurate as possible.

In concert with enforcement, public awareness of the requirements of the CEHAA and of how implementation of this Act will affect shorefront development and human use in the barrier system should be increased.

*Even if existing laws, including the CEHAA, are effectively implemented and enforced, a need for new laws and regulations (including local zoning and land use control laws, for example) providing additional protection still exists.*

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#### ■ Coordination among all levels of government with regard to protection of the coastal barrier system is poor.

A number of town, county, State and federal government agencies have some responsibility for, or impact on, activities affecting the barrier system. Several private, non-profit organizations also exercise roles and responsibilities affecting the system. Among the roles and responsibilities of these agencies and organizations is the review of development proposals, issuance of development permits, establishment and enforcement of regulations, provision of technical assistance, ownership and management of land, assessment of resources, support and implementation of special projects, provision of public information and promotion of conservation objectives.

The resources of the eastern Lake Ontario coastal barrier system exist as a single integrated system of beaches, sand dunes, marshes and embayments. The natural boundaries of this system, however, do not conform to a single set of political or institutional boundaries. The barrier system falls within the jurisdiction of three towns and numerous government agencies and contains both publicly owned and privately owned land. This report represents the first effort to establish a coordinated set of management objectives that would cross political and institutional boundaries and address the barrier system as a single integrated unit. Some differences exist in the approaches to resource management exhibited by the three towns (e.g., one town does not have zoning regulations, a "critical environmental area" has been established in only one town, one town does not have a planning board) and by the different State agencies with roles and responsibilities for resource management in the system.

Of the four principal State agencies (DEC, OPRHP, DOS and SLEOC) with active roles and responsibilities in the barrier system, the role of the DEC is most prominent, involving both regulatory as well as land ownership and management responsibilities. Two different DEC regional offices as well as the central DEC office are involved in carrying out these responsibilities. Some concern has been expressed with regard to perceived differences between the approach to resource management followed by the regional offices, and with regard to the perceived emphasis of the DEC on species management rather than on protection of the barrier system within the WMAs.

Concern has also been expressed over a lack of coordination between State and local government levels, as evidenced by past misunderstandings and lack of awareness on the local level with regard to State environmental regulations.

- ***Management Objective:** Coordination among different jurisdictions and concerned agencies should be improved with regard to future planning, management and enforcement actions affecting the barrier system.*

*Short and long-term policies, guidelines and strategies to be used by local, State and federal agencies for guiding management decisions affecting uses, activities and development in the barrier system should be established.*

*Establishing these policies would be best accomplished under a comprehensive planning process that would involve the three towns and the support and approval by the State and federal governments through their representative agencies.*

*In addition, improved coordination will require formalized and continuous communication among the jurisdictions and agencies. One approach that can be used to achieve this goal would be for State and local agencies to establish periodic training sessions for regulatory personnel to improve consistency, efficiency and effectiveness in the enforcement of land and water use controls*

*affecting the barrier system.*

*Finally, there is a clear need for a continued open forum among all interested parties to maintain essential communication and to foster coordination. The Ontario Dune Coalition provides an important function in this regard. The annual "Sand Dune Appreciation" event is an activity that is useful for enhancing public involvement in dune protection. A similar and expanded effort, perhaps in the form of a regional conference involving other Great Lakes states and Canadian jurisdictions, should help stimulate broader participation by involved organizations.*

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## CHAPTER EIGHT:

# OPPORTUNITIES AND OPTIONS FOR IMPLEMENTING MANAGEMENT GUIDELINES AND OBJECTIVES

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*This chapter reviews opportunities and options for implementing the management guidelines and objectives outlined in Chapters Three through Seven. Included are recommendations directed toward concerned citizens and conservation groups as well as educational institutions and the various government entities with roles and responsibilities affecting the barrier system. A summary of these suggested roles and opportunities for resource management is shown in Figure 86.*

*Recommendations for implementing management guidelines and objectives are described for:*

- *Concerned citizens;*
  - *Conservation groups;*
  - *Town boards and departments;*
  - *County agencies;*
  - *State agencies;*
  - *Federal agencies; and*
  - *Educational institutions.*
-



## PRIVATE LANDOWNERS AND CONCERNED CITIZENS

Almost 10 miles or approximately 60% of the shoreline contained in the coastal barrier system is privately owned. It is therefore important that private landowners play an important role in ensuring the future protection and wise use of barrier system resources, including the valuable sand dune resources. There are a number of ways that private landowners as well as other concerned citizens can contribute to the protection and management of the barrier system. Landowners and citizens can, for example, apply appropriate erosion control measures, practice wise land use and development techniques, report violations of environmental regulations, support government efforts to protect and manage the barrier system and make use of special initiatives to protect sensitive lands.

- **Apply Appropriate Erosion Control Measures.**

Some of the developed sections of the barrier system are especially affected by erosion and a number of shorefront homes are threatened. As a result, some property owners have established structural erosion control measures (rip-rap and revetment structures, for example) in an effort to protect their properties. These measures can be effective in the short term, but over time can result in accelerated erosion on adjacent properties and cause other adverse impacts on the barrier system. Whenever possible, shorefront property owners should make use of nonstructural approaches for reducing natural erosion rates. These nonstructural measures should include planting stabilizing vegetation and placing snowfencing to protect and encourage dune growth. Serious consideration should also be given to relocating threatened structures. In most cases, however, it is best to initiate nonstructural measures prior to erosion becoming an immediate threat to property.

Before proceeding with erosion control measures, property owners should seek technical assistance on how to do so from the Oswego and Jefferson County Soil and Water Conservation Districts and from other sources such as the New York

State Department of State and the New York Sea Grant Extension Program.

In addition, property owners should, whenever possible, consider the establishment of common pathways and dune walkover structures to guide pedestrian traffic through sensitive dune areas.

These private dune walkover structures should be of simple construction, relatively inexpensive and expendable. That is, the walkover should not be constructed to withstand forces that would erode the dune. If the walkover is destroyed by a severe storm, it should be relatively easy to replace it. In some instances, adjacent homeowners may be able to share a single walkover structure, further reducing the amount of dune disturbance that might otherwise occur if each homeowner used a separate path to the shore. Construction of dune walkovers should be combined with the planting of stabilizing vegetation to further promote dune stabilization.

Concerned citizens should support implementation of the Coastal Erosion Hazard Areas Act. Residents should urge their town governments to strictly enforce local regulations for implementing the Act or, in the case of those towns that have deferred local implementation of the Act at this time, to consider local implementation at some future time.

- **Practice Wise Use and Development Techniques.**

In addition to establishing appropriate erosion control measures, property owners and visitors to the barrier system should refrain from activities that contribute to dune erosion. These include certain recreational activities as well as construction activities associated with new development on the barrier system. For example, children as well as adults should not climb on the steep, nonvegetated faces of the high sand dunes; sand dunes should not be removed to establish building or other development sites; and motorized vehicles such as ATVs and four wheel drive vehicles should not be used in the dunes. The Coastal Erosion Hazard Areas Act regulations providing for dune preservation by prohibiting these activities should be observed by property

owners and visitors.

- **Identify Violations and Contribute to Enforcement of Existing Regulations.**

A number of State regulations and authorities control uses and activities in the barrier system, but enforcement is often limited by a lack of manpower (too few DEC Conservation Officers, for example) to enforce the regulations. Property owners and visitors to the barrier system should become familiar with existing regulations and be observant for violations that can then be reported to the appropriate authorities. Neighborhood groups can be formed for this purpose. The Ontario Dune Coalition's efforts to establish a "Dune Watch Network" among concerned property owners should be supported and expanded to include all of the shorefront neighborhoods in the barrier system.

- **Support Resource Protection and Management Efforts.**

Citizens can also play an important role in ensuring the wise use and protection of the barrier system by generally taking an interest in the future of the system (viewing the system from the perspective of "land stewards", for example) and expressing this interest in a manner that receives the attention of their town boards and other political representatives. Citizens can express their concerns through organized groups. The Sandy Creek Regional Involved People (SCRIP) and the Sandy Pond Resource Management Committee are two examples of groups of private citizens concerned with conditions in their community and with voices that can influence their town government.

Although not a group formed by concerned citizens, the Ontario Dune Coalition provides a forum where citizens can voice their concerns and contribute to increased public awareness of the values associated with the barrier system and the sand dune resources. Residents and barrier system users can also show their support for the development of appropriate town development controls to protect barrier system resources. Citizens should attend local hearings and provide

testimony on proposed projects with the potential to affect the barrier system.

In addition, concerned citizens can volunteer their time and effort to assist in various special resource protection projects such as installing snowfencing, planting vegetation, posting informational signs and other activities.

- **Use Private Initiatives to Protect Undeveloped Lands.**

A number of options are available to private landowners interested in contributing to the protection of barrier system resources by ensuring the future preservation of their undeveloped land. The owners of undeveloped property in the barrier system can consider the following land preservation options, beginning with the conservation easement.

A *conservation easement* is a legal means by which the landowner can voluntarily set permanent limitations on the future use of his land while retaining ownership. The owner still uses the land and can sell it, but use of the land will always remain subject to the terms of the easement. Covenants placed in the easement can be tailored to fit the special resource characteristics of the land and can limit the number and location of structures as well as specify the type of activities that can take place on the land. A conservation easement can be granted to a private organization or government agency interested in preserving the natural or open space characteristics of the land. Because restrictions will be placed on the owner's use of the land, the market value of the property will be reduced but this reduction may be offset by certain tax advantages.

Other private options for protecting land include: a) the use of *mutual covenants* with neighboring landowners; and b) entering into a *long-term lease agreement* with a local land trust or conservation organization such as The Nature Conservancy or the Audubon Society.

Landowners who do not wish to retain ownership may donate or sell their properties to a non-

profit conservation organization or government agency in order to ensure future protection of the land. There are a number of ways that the donation or sale can be handled, and each way will have different financial and personal implications for the property owner. For example, an *outright donation* can be made and the owner can claim an income tax deduction for the fair market value of the land. Also, a *donation by devise* can be made which is enacted at the time of death by making the gift in a will, or a *donation with reserved life estate* can be made whereby the landowner donates the land but retains lifetime use of the land.

Landowners may need or prefer to sell their properties but still wish to see them protected. Land can be sold to a willing conservation organization or government agency, and the land owner has the option of selling at *fair market value*, at a *bargain sale* or *installment sale*. Opportunities to sell at fair market value may be limited by the availability of funds from possible landholding organizations or agencies. In a bargain sale, the landowner sells land to a government agency or qualified nonprofit organization for a price less than fair market value. Because the selling price is lower, landholding agencies or organizations may be more willing to purchase the land and the landowner can deduct as a charitable contribution the difference between the bargain price received and the fair market value. An installment sale involves an agreement between the landowner and the purchaser whereby the landholding agency either pays for the land in annual installments or buys a portion of the land each year.

Owners of land within the barrier system wishing to learn more about the opportunities associated with various mechanisms for protecting land can contact a number of nonprofit organizations or government agencies concerned with resource use and protection in the barrier system for additional information and assistance.

## CONSERVATION GROUPS

Nonprofit conservation groups (including The Nature Conservancy, Ontario Dune Coalition, Onondaga Audubon Society and other groups) should continue to promote wise resource use and management in the barrier system through their environmental advocacy activities, including review and comment on development proposals that would affect the system. The Nature Conservancy can directly contribute to resource management through continued active management and planning for its El Dorado Beach Preserve. The Ontario Dune Coalition can continue to develop and expand its role as the primary advocacy group for protection of the eastern Lake Ontario sand dunes. Conservation organizations should consider any opportunities that may arise for acquiring land or accepting conservation easements to protect barrier system resources.

- **Continue to Promote Environmental Protection Objectives.**

The nonprofit conservation organizations can serve as important advocates for environmental management and protection objectives in the eastern Lake Ontario region. These groups can increase the awareness of their members with regard to the resource values of the barrier system and promote desirable management objectives for protection of these values. These groups can also contribute to the education of the general public through special programs and educational materials.

- **Review and Comment on Development Proposals.**

In their role as environmental advocates, nonprofit organizations should review and provide comments on development proposals with the potential to negatively affect barrier system resources. In addition to participating in local government review processes, comments should also be provided with regard to permit applications submitted to the Corps of Engineers and various State agencies. The conservation groups can also comment and provide testimony on development proposals through the State Envi-

ronmental Quality Review Act (SEQRA) process.

- **Continue Active Management Planning in the El Dorado Beach Preserve.**

Through continued active management of its El Dorado Beach Preserve, The Nature Conservancy (TNC) contributes directly to the protection of barrier system resources. As recommended in Chapter Three, The Nature Conservancy should coordinate its management efforts with the New York Department of Environmental Conservation (DEC) to ensure future protection of the "high" dunes which extend from TNC's preserve into the State's Black Pond Wildlife Management Area. The property boundary between The Nature Conservancy's preserve and the WMA should not limit or otherwise affect management efforts in this area. The high dunes and sufficient buffer area should be designated in policies adopted by TNC and the DEC as a "preservation" area to remain in its natural condition. Recreational uses and most other activities, with the exception of supervised visits for scientific study, should be prohibited in this "high dune" area.

TNC should consider changing the management-use category of all or a portion of its preserve to a more restrictive human use category. TNC should continue to carry out a nonstructural erosion control program including the planting of dune stabilizing vegetation and the placement of snowfencing as described in Chapter Three. TNC and the DEC should consider the designation of a single land steward (or special group that would have stewardship-related responsibilities) to oversee activities on the barrier portion of both the El Dorado Beach preserve and the WMA.

- **Continue the Advocacy Role of the Ontario Dune Coalition.**

The Ontario Dune Coalition should continue to develop and expand its role as the principal advocacy group for the protection and wise management of barrier system resources. TODC should continue to sponsor and support special

projects such as: the construction of a dune-walkover structure in the Southwick-Lakeview Resource Area (see Chapter Four); educational events such as the annual Sand Dune Appreciation Day; and special dune restoration projects that can be carried out by volunteers.

TODC should also sponsor an informational sign program to focus public attention on the resource values and management problems associated with the barrier system. Special signs should be employed at public access locations throughout the barrier system to promote the image of the barrier system as a regional resource with a variety of linked component parts. To further stimulate public involvement, a design contest might be held in local schools to select the best design or logo for an "Eastern Lake Ontario Coastal Barrier System" sign theme.

In addition to its important role as a source of information and educational materials for members and the general public, TODC should continue to provide a forum for the exchange of ideas and the discussion of issues among private landowners, concerned citizens and representatives of the various town, county, State and federal agencies with roles and responsibilities affecting barrier system resources. In this role, TODC can also contribute to strengthened networking between its members with regard to the exchange of information relevant to the design and environmental assessment of barrier system development proposals.

TODC should serve as the lead organization for assembling available reports, maps, documents and other information on the barrier system and seeing that this information is maintained in the Snow Memorial Library in Pulaski so that it is available for research and public education.

- **Work with Private Landowners for Land Protection.**

As described in the previous section, there are various private landowner options available for protecting sensitive lands from development. There may be opportunities for the non-profit conservation organizations, and for the towns

and the State agencies concerned with resource protection in the barrier system, to implement these options by accepting conservation easements as well as donations of property.

## TOWN BOARDS AND DEPARTMENTS

All three towns—Richland, Sandy Creek and Ellisburg—should promote and undertake long-range planning activities to address the future use and protection of their coastal resources, including those found within the barrier system. As an initial step in developing special measures for protecting the barrier system, each town should adopt a special resolution that recognizes the importance and significance of the barrier system within its boundaries. The towns should also support strict implementation of the Coastal Erosion Hazard Areas Act. Those towns (Sandy Creek and Richland) that have opted not to assume local responsibility for implementing the Act at this time should consider assuming local responsibility in the future. All three towns should participate in the activities of the Ontario Dune Coalition and make use of the knowledge and expertise available from the Coalition.

Each town can take several actions to protect barrier system resources. These include:

- **Adopt special land use policies and plans.**

These policies and plans do not have to be very complicated and can initially take the form of a resolution on the part of each town board to ensure wise use and protection of barrier system resources. To accompany this resolution, the barrier system can be simply identified on a U.S. Geological Survey topographic map, air photo or any other base map used by the town. The towns could then work to develop more specific policies for implementing the basic resolution, including, for example, policies to: a) guide public infrastructure investments away from sensitive lands; b) encourage cooperative town-private landowner efforts to protect undeveloped properties; c) urge the State to better manage its lands in accordance with specific resource protection goals; and d) guide new development

to appropriate upland areas away from the barrier system.

The towns should incorporate any special land use policies and plans directed toward the barrier system into existing or future town-wide Master Plans.

- **Work with private landowners to protect sensitive lands.**

As described earlier, there are a number of private initiatives that can be used to protect sensitive lands. The towns should explore these various landowner options, including the acceptance of conservation easements and possible donations of property from private landowners, in more detail.

- **Prepare Local Waterfront Revitalization Programs.**

The New York State Department of State, in partnership with local governments, provides the opportunity for a coastal community to prepare a Local Waterfront Revitalization Program (see Chapter Two) to promote the beneficial use and protection of its coastal area resources. In the eastern Lake Ontario region, the State-designated coastal area extends from the barrier beach inland to approximately Route 3. A municipality can develop an LWRP to guide waterfront development balanced with coastal resource protection. Following approval of an LWRP by the Department of State, all federal and State actions within the community's coastal area must be consistent with the LWRP.

Currently, neither Ellisburg, Sandy Creek or Richland is participating in the LWRP process. These towns, either individually or collectively, should consider participating in this process, with a goal of implementing specific policies for the protection of the natural resources of the eastern Lake Ontario coastal barrier system.

- **Adopt zoning requirements and other special regulations.**

Following the adoption of specific land use

policies and plans, the towns can provide added protection to the barrier system by adopting appropriate zoning and other land use controls. These controls should ensure that development occurs in a manner consistent with the capability of the barrier system to accommodate development without significant adverse impacts on natural resource values occurring.

While town zoning and other land use controls should be established on a town-wide basis, special "overlay" zoning districts can also be applied over the underlying zoning districts in the barrier system. These overlay districts could be used to require special site plan review procedures be applied to any development proposal affecting the barrier system.

In addition to zoning requirements that could limit the types of uses permitted in the barrier system, other special regulations can also be applied to the protection of barrier system resources, including site plan review and subdivision approval requirements. The towns should seek assistance from the county planning departments, the EMCs, the St. Lawrence-Eastern Ontario Commission and other agencies in the development of zoning and other land use controls.

### Town of Richland

At a minimum, the Town of Richland should establish a Critical Environmental Area (as provided under the State Environmental Quality Review Act) that would include the Town's land and water area west of Route 3. This CEA should encompass the coastal barrier system as well as the mouth of the Salmon River and the Port Ontario Harbor of Refuge. This Critical Environmental Area should also extend inland to east of Route 3 (as the Town of Sandy Creek has) in order to fully address actions that are likely to affect the barrier system. Establishing a CEA that covers the barrier system and Salmon River mouth will provide Richland with an increased measure of local control over development in the Port Ontario area which is currently subject to increasing development pressures. The CEA should also cover the privately owned section of the

Deer Creek Marsh adjacent to the Deer Creek WMA and the undeveloped, privately owned area east of Rainbow Shores Drive and north of the northern entrance to the Deer Creek WMA.

The Town Planning Board should seek available assistance from the Oswego County Environmental Management Council, the Oswego County Planning Department and the St. Lawrence-Eastern Ontario Commission in reviewing the potential impacts of development proposals within this recommended Critical Environmental Area.

### Town of Sandy Creek

The importance of local involvement in management of the coastal barrier system in the Town of Sandy Creek is highlighted by the facts that: 1) all of the barrier system lands within the Town are privately owned (with the exception of Town highway right-of-ways such as the right-of-way that passes through Sandy Island Beach); 2) there are no State lands or other lands outside of Town jurisdiction (with the exception of nearshore Lake Ontario underwater and beach lands held by the State of New York); and 3) the largest amount of undeveloped, privately owned land in the overall barrier system is found within Town jurisdiction (on the north and south spits at North Sandy Pond).

Although the Town has established a Critical Environmental Area encompassing the barrier system, the North and South Sandy Ponds area, all of the land west of Route 3 and some land east of Route 3, the Town has no zoning or other types of land use regulations (except a mobile home law, sanitary code and floodplain regulations) that could serve to protect coastal resources and guide use and development in this area.

It is important that the Town Board give careful consideration to the establishment of zoning or other types of land use controls to protect its coastal resources. In 1988, the Town Board appointed the Sandy Pond Resource Management Committee which is charged with developing recommendations for resource use and protection in the North and South Sandy Ponds area, including the barrier system. The recommendations of this committee should be

factored into the Town-wide Master Plan currently being prepared by the Sandy Creek Regional Planning Board. Specific Town policies should be established to define the manner in which the Town wishes the barrier system resources to be utilized.

The Town should devote special attention to the privately owned and currently undeveloped portions of the north and south spits. Measures should be established to ensure the protection of the natural and recreational values in these areas. The Town should work with the owners of the undeveloped portions of the north and south spits to ensure that any future plans for the use and development of these areas are consistent with natural resource protection objectives. While the Town has recently declined to assume local implementation of the CEHAA, the Town should reconsider local implementation in the future to guide future development on the barrier system in a manner most consistent with the resource sensitivities and natural values of the barrier system.

The Town should also work with the owners of Sandy Island Beach to address use of the Town right-of-way through the beach area and the associated activities (unauthorized ATV use, for example) that contribute to degradation of barrier system resources in this area. This area will continue to be heavily impacted by visitors if access through the right-of-way is not better monitored and managed.

### **Town of Ellisburg**

Much of the barrier system land within the Town of Ellisburg is removed from local jurisdiction by virtue of its being located within the State's Black Pond and Lakeview wildlife management areas and Southwick Beach State Park. The remaining privately owned barrier system land is developed with seasonal and year-round cottages. The Town should request that the DEC and the OPRHP prepare management plans that address the relationship between use and protection of their lands and the effects of uses of these State lands on adjacent privately owned property.

Future uses and possible redevelopment activities in the North Jefferson Park - Jefferson Park - Sunset

Bluff - Eastman Tract residential area may have important effects on the barrier system and the Town should be prepared to address and, as necessary, control these uses and activities. The Town should attempt to control unauthorized vehicle use of the Town right-of-way that intersects the Lake Ontario beach at Jefferson Park Road. A measure of local control over barrier system resources should be established by strict local implementation of the Coastal Erosion Hazard Areas Act.

## **COUNTY AGENCIES**

The principal role of Oswego and Jefferson County agencies in future management of barrier system resources should focus on the provision of technical assistance to communities and individuals. Assistance should be provided in response to specific requests from the towns. The county planning departments, soil and water conservation districts and Oswego County Environmental Management Council should maintain active participation in the Ontario Dune Coalition. The newly established Jefferson County EMC should also become an active participant in TODC activities.

### **Planning Departments**

Through the provision of technical assistance, primarily to the towns, the Oswego and Jefferson County planning departments can contribute to future resource management efforts in the barrier system. Future updates of the county land use plans should address protection of barrier system resources.

- **Assist communities in the review of development proposals that may affect the barrier system.**

Assistance should involve the provision of resource information and the identification of potential impacts, as well as help in understanding the requirements of State and federal legislation and regulatory programs affecting the barrier system.



- **Assist communities in the formulation of planning and zoning initiatives to protect the barrier system.**

The planning departments should also assist the town boards and town planning boards in formulating and establishing special planning and zoning measures to protect the barrier system. These measures might include new zoning districts and regulations as well as subdivision and site plan review requirements.

- **Update county land use plans to address protection of the barrier system.**

As neither the Oswego County nor Jefferson County land use plans now specifically address the barrier system, future updates of these plans should incorporate recognition of the uniqueness and resource sensitivity of the system. The plans should incorporate general policies, goals and strategies for protection of the system.

### **Soil and Water Conservation Districts**

The principal role of the soil and water conservation districts (SWCDs) in the future management of the barrier system should involve the provision of technical assistance to private landowners and be directed toward the establishment of appropriate erosion control measures. Since the districts are not regulatory agencies, private homeowners who are reluctant to go to regulatory agencies such as the Corps of Engineers or the DEC for assistance may feel more comfortable asking the SWCDs for assistance.

- **Provide technical assistance to private landowners for the application of appropriate erosion control measures.**

This assistance should include information on nonstructural erosion control measures, including the planting of stabilizing grasses and the construction of dune walkover structures.

### **Environmental Management Councils**

The Oswego County EMC should continue to play an important role in providing educational programs

as well as technical assistance in the review of proposed projects relative to the protection of barrier system resources. The Jefferson County EMC should also become involved with the promotion of resource management in the barrier system.

- **Conduct educational programs and special projects that focus on the barrier system.**

These programs should include efforts to help local governments understand and comply with the requirements of State and federal environmental legislation. Also, the EMCs can continue to provide informational materials to citizens and local officials to promote greater awareness of the value of barrier system resources.

- **Assist communities in the review of development proposals that may affect the barrier system.**

Assistance may involve the provision of resource information, the identification of potential impacts and help in understanding the requirements of State and federal legislation and regulatory programs affecting the barrier system.

### **Oswego County Health Department**

The County Health Department can contribute to the protection of barrier system resources through its enforcement of State Health Code regulations.

- **Strengthen enforcement of Health Code requirements.**

The County Health Department should attach added emphasis to the monitoring of development activities in the barrier system to ensure that the requirements of the State Health Code are adhered to. Complaints that existing facilities are not functioning properly should be investigated and violations should be eliminated without delay. The Health Department should investigate strengthening the existing Health Codes.

## STATE AGENCIES

As described in Chapter Two, the State agencies with the most active roles and responsibilities affecting resource management in the barrier system are: the Department of Environmental Conservation; the Department of State; the Office of Parks, Recreation and Historic Preservation; the St. Lawrence-Eastern Ontario Commission; and the New York Sea Grant Extension. All of these agencies can and should assume an expanded role in contributing to improved resource management and increased public awareness of the special significance of the coastal barrier system.

The State of New York owns an estimated 41% or 6.7 miles of the barrier system shoreline, including parts of three wildlife management areas and State park land managed by the Department of Environmental Conservation and the Office of Parks, Recreation and Historic Preservation, respectively. In addition to its responsibilities for management of its own lands, the State is also involved in the management of barrier system resources, including private lands, through its various regulatory and permitting programs.

While the immediate State role in barrier system management should focus on the management of State-owned lands, it is also possible for the State to become involved in the control and management of uses on private lands should local efforts in this regard prove to be inadequate. State acquisition of currently undeveloped, privately owned land on the barrier system is one example of a State action that could be considered in the future.

### Department of Environmental Conservation

The DEC exercises both resource management and regulatory responsibilities in the barrier system. Management responsibilities are directed toward managing fish and wildlife resources in the three wildlife management areas. Regulatory responsibilities include permit authority over activities affecting navigable waters and freshwater wetlands, authority for protecting water quality and coastal erosion hazard areas and other responsibilities.

## Resource Management Responsibilities

To summarize, there are several areas in which the DEC should strengthen its current roles with regard to resource management:

- **Prepare detailed, long-range management plans for each of the three wildlife management areas in the barrier system.**

These plans should address not only fish and wildlife species management but also habitat protection and the management and control of recreational uses in the Black Pond, Lakeview and Deer Creek WMAs. In the case of the Black Pond WMA, the management plan should be developed in coordination with The Nature Conservancy. (See Chapter Three.) In the case of the Lakeview WMA, a new plan should be developed in coordination with the OPRHP. (See Chapter Four.) Plans should be coordinated with any town plans, including town master plans and LWRPs, that may be developed.

- **Develop coordinated approaches to resource management in the barrier system.**

Although management responsibilities in the barrier system are divided between the DEC's Region 6 and Region 7, the three WMAs are components of one unique ecological system and are subject to similar management problems, including dune erosion and difficulties in enforcing existing use regulations. As a result, the two DEC regions should work together in developing and implementing similar management approaches to common problems in the WMAs. These approaches should be reflected in the long-range management plans described above. These plans should contain consistent policies for the protection of the sand dunes and other barrier system resources.

- **Strengthen enforcement of existing regulations governing uses and activities in the WMAs.**

Although the DEC's ability to adequately enforce existing use regulations in the WMAs is subject to fiscal constraints (affecting the number of

available Conservation Officers, for example), the problems now caused by uncontrolled and unauthorized human activities in the WMAs must be addressed through improved enforcement. Higher priority should be attached to enforcement of existing prohibitions against all activities that will cause disturbance of the sand dune ecosystem.

- **Place new and improved signs to guide resource use and activity in the WMAs.**

These signs should identify special, protected resource areas as well as areas where limited recreational activities can take place. The signs should be of similar style in each of the WMAs and should be designed to educate the public as well as inform the public of various use regulations. For example, informational signs placed near the main entrances to the WMAs can emphasize the fact that the WMAs are components of a larger ecological system. These signs should help to promote the image of the barrier system as a regional resource with a variety of linked component parts. The informational signs should be coordinated with the logo or design of an overall barrier system sign theme as discussed earlier.

There are also several other possible ways in which the DEC might affect resource management in the barrier system in the future.

- **Consider State acquisition of lands currently under private ownership.**

Should town controls and private landowner options to protect barrier system resources prove to be ineffective or inadequate, the possibility exists that the State could exercise its power of eminent domain to acquire and protect sensitive barrier system resource areas from development. As described earlier, this power was exercised by the State to acquire land slated for private campground development in what is now the Deer Creek WMA. Currently undeveloped, privately owned land in the barrier system might be considered for State acquisition in the future. A condition of acquisition would be a commitment for resource management and protection

on a level that currently does not exist.

- **Consider a State-federal land swap.**

As described in the following section on federal agency management options, acquisition of State-owned lands is a management option that has been carried out in other areas. A future land swap between the federal government and the State of New York might involve the transfer of State-owned lands in the barrier system to the federal government in exchange for the State receiving federal lands elsewhere in New York State. Such a land swap might result in stricter, federal use controls being imposed on portions of the barrier system.

- **Consider establishing a DEC environmental education center to promote sand dune management and appreciation in the region, perhaps at the Deer Creek Wildlife Management Area.**

The DEC operates several environmental education centers in the State, including a wetlands education center in the Adirondacks. Because of the unique resource character of the eastern Lake Ontario coastal barrier system, it is appropriate to consider the possibility of establishing a similar environmental education center to promote study and understanding of barrier system resources. Such a center, which could be established at one of the WMAs, should include a classroom facility and educational exhibits and would also establish a management presence that would serve to discourage unauthorized activities.

- **Carry out long-range management planning, coordinated with the Office of Parks, Recreation and Historic Preservation, for the Lakeview WMA.**

As described in Chapter Four, because of the interrelationship between use of the Lakeview WMA and Southwick Beach State Park, improved management coordination is necessary between the DEC and the OPRHP. Without this coordination, the continued spillover of users from the park can be expected to result in increased adverse impacts on the coastal barrier at the Lakeview WMA. Improved coordination

(to replace the washed-out bridge that has affected the park's trail system, for example) is also needed to ensure optimum public enjoyment of these public lands.

- Consider the transfer of some management responsibilities for portions of the coastal barrier at the Lakeview and Deer Creek WMAs to the OPRHP.

This long-range management option should be considered if resource values currently being degraded in the WMAs can not be protected through more conservative measures. For the Lakeview WMA, one management option to consider is the designation of a special recreational use area within a relatively small section of the WMA near the park. (See Chapter Four.) This designation might allow for more concentrated and active recreational activities by park visitors in a clearly defined and carefully managed section of the WMA near the park. This section could include, at a minimum, the area of the dune walkover and the nature trail leading to the walkover. Authorization for expanded recreational use here would have to be balanced by increased protection of natural areas elsewhere in the WMA. Because of proximity to the State Park, primary responsibilities for monitoring and enforcement would most logically be assumed by the OPRHP.

For the Deer Creek WMA, one long-term management option to consider (as described in Chapter Six) is operation of the barrier portion of the WMA by the OPRHP as a closely supervised recreational area. This transfer of responsibility from the DEC to the OPRHP should be considered in order to better protect the area from currently uncontrolled human activities.

### Regulatory Responsibilities

In addition to its resource management responsibilities, the DEC's regulatory programs, in coordination with the federal regulatory programs, must continue to protect the barrier system's natural values from future development pressures. To help ensure this protection, the DEC should consider the

following in carrying out its regulatory reviews.

- Incorporate recognition of the uniqueness and resource sensitivity of the barrier system in the review of development proposals affecting the system.

All development proposals affecting the eastern Lake Ontario coastal barrier system should be viewed as having the potential for negative impacts on a unique and sensitive resource.

- Address the potential for cumulative impacts to affect the barrier system.

Individual projects may appear relatively minor in significance, but over a period of time these individually minor actions can cause collectively significant impacts and the piecemeal loss of important environmental resources. The DEC considers cumulative impacts in its regulatory process, but does so primarily through the application of professional judgement applied to case-by-case reviews. The DEC should participate with other State as well as federal agencies concerned with resource protection in the region to address the difficulties associated with cumulative impact assessment and in developing new methods for considering cumulative impacts in its review and permitting programs.

- Strengthen enforcement of existing permitting requirements.

To the extent possible, the DEC should attach added emphasis to monitoring development activities in the barrier system to ensure that the requirements of existing regulatory requirements are adhered to. Any unauthorized work in wetlands and navigable waters should be eliminated by the offending party without delay. "After-the-fact" permits that would bring future violations into compliance should not be issued except under the most extenuating of circumstances.

### Department of State

Of the several State agencies with roles and responsibilities in the barrier system, the DOS's

programs and involvement in resource management are perhaps less understood than, for example, those of the DEC and the OPRHP—agencies that own land in the barrier system and have a management presence in the area. Nonetheless, the DOS, acting through its Division of Coastal Resources and Waterfront Revitalization and its existing programs and requirements, must continue to have an important role in ensuring the future protection of barrier system resources.

- **Incorporate recognition of the uniqueness and resource sensitivity of the barrier system into the review of development proposals affecting the system.**

The DOS evaluates all major federal and State actions in the barrier system and all major actions requiring federal or State permits for consistency with the New York Coastal Management Program. In conducting this evaluation, the DOS should view all development proposals affecting the eastern Lake Ontario coastal barrier system as having the potential for negative impacts on a unique and sensitive resource.

Some actions that may affect the barrier system in the future and which the DOS should be prepared to address include possible future proposals to: stabilize the North Sandy Pond inlet; develop the currently undeveloped barrier spits in the North and South Sandy Pond Resource Area; and expand or develop new commercial facilities such as marinas, campgrounds and beach access areas. The DOS should also be prepared to address State agency activities in the WMAs and Southwick Beach State Park.

In addition, the DOS should be concerned with smaller scale development proposals affecting sensitive resource areas and the possible cumulative impacts of this type of development.

Some of the State coastal management policies (established in the New York Coastal Management Program) that are particularly important to consistency determinations for federal and State actions are:

*"Significant coastal fish and wildlife habitats will be protec-*

*ted, preserved, and where practical, restored so as to maintain their viability as habitats."*

*"Activities or development in the coastal area will be undertaken so as to minimize damage to natural protective features including beaches, dunes, barrier islands and bluffs."*

*"Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land."*

*"Protect, maintain and increase the level and types of access to public water-related recreation resources and facilities."*

*"Prevent impairment of scenic resources of Statewide significance."*

*"Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas."*

- **Provide funding and technical support for special studies and Local Waterfront Revitalization Programs.**

The DOS can also affect resource management and protection in the barrier system through its support for special studies and local planning programs. This support can take the form of funding as well as technical assistance. For example, the DOS should allocate funds for special studies to more precisely identify the age of the relict sand dunes and assess longshore drift conditions in the area. The DOS may also be able to contribute to local comprehensive planning, particularly in the Sandy Pond and Port Ontario areas, through its Local Waterfront Revitalization Program. The DOS's active involvement with the Ontario Dune Coalition also provides an important opportunity for continued technical assistance to the barrier system communities and to local residents.

In addition, the barrier system should be evaluated for inclusion in the DOS's developing Scenic Areas of Statewide Significance Program.

## **Office of Parks, Recreation and Historic Preservation**

The OPRHP's role in resource management in the barrier system should focus on management of

Southwick Beach State Park and on planning to accommodate an increasing park user population with its potential for "spill-over" impacts on the adjacent Lakeview WMA and residential areas. A long-term option for consideration would have the OPRHP assuming management responsibility and/or ownership of the barrier portion of the Deer Creek Wildlife Management Area in the southern part of the barrier system.

- **Establish improved coordination with the DEC with regard to management planning for Southwick Beach State Park and Lakeview WMA.**

This coordination should be for the purpose of addressing immediate problems such as the replacement of the bridge on the nature trail near the dune walkover and for long-term planning. One of the OPRHP's principal roles in contributing to resource management in the barrier system should focus on the preparation of a long-range management plan for Southwick Beach State Park that is prepared in coordination with a management plan for the Lakeview Wildlife Management Area. This coordination is needed in order to ensure optimum user benefits consistent with the capacity of the area's resources to accommodate this use.

In addition to management of Southwick Beach, there are several other ways in which the OPRHP could conceivably exercise an expanded management role in the barrier system:

- **Consider expansion of Southwick Beach State Park to include a portion of Lakeview WMA.**

As described in Chapter Four, since current use pressures appear to be becoming too great to handle within existing park boundaries and resource values throughout the WMA are being adversely affected by uncontrolled and unauthorized recreational uses spilling over from the park, transfer of a portion of the coastal barrier from the DEC to the OPRHP should be considered. At a minimum, management responsibilities for the northern portion of the WMA, including the dune walkover structure and the barrier beach segment of the Southwick-Lakeview nature trail, should be transferred to the

OPRHP. The purpose of such transfer would be to control existing recreational use in the best possible manner and to better ensure long-term protection of barrier system resources through expanded management controls.

- **Consider managing the barrier portion of the Deer Creek WMA as a State park facility.**

As discussed in Chapter Six, this option would change the current management and/or ownership status of the barrier portion of the WMA. Again, the purpose of such a change would be to manage existing recreational use in the area by establishing tight controls on an area that is currently subject to severe resource degradation caused by uncontrolled use.

### **New York Sea Grant Extension**

The principal role of the Sea Grant Extension should be to provide technical assistance and information to the public and to support special research projects.

- **Provide technical assistance and information to private landowners on the application of appropriate erosion control measures.**

Assistance should include information on the planting of stabilizing grasses and the construction of appropriate dune-walkover structures to protect sand dunes and stabilizing vegetation from human disturbance. While the newly constructed dune-walkover at the Lakeview WMA serves as an example of the type of walkover structure appropriate for use on public lands where large numbers of people are expected, structures for use on private properties in the dune system should be much less substantial. The Sea Grant Extension can assist private landowners in designing and constructing such walkovers. Several demonstration projects should be initiated and publicized.

- **Provide information on fluctuating lake levels and the factors affecting lake levels.**

The Sea Grant Extension can contribute to

increasing public knowledge and information about lake level regulation and the role of the International Joint Commission in controlling water levels. The Sea Grant Extension should also review lake level information published by the Corps of Engineers in order to be able to respond to public concerns that data on lake level trends and the relationship of existing levels to long-term averages as published by the Corps of Engineers is sometimes misleading and inaccurate.

- **Conduct special research on topics pertinent to resource management in the barrier system.**

There are a number of special research topics that the Sea Grant Extension can pursue, either independently or in conjunction with other agencies. These include underwater land ownership conditions and the public's rights of access along the foreshore in the barrier system. Longshore drift conditions, the precise age of the relict sand dunes and the costs and benefits of various structural and nonstructural dune stabilization measures are examples of other pertinent research topics. In addition, the Sea Grant Extension should coordinate research efforts with such organizations as the Great Lakes Consortium.

### **St. Lawrence-Eastern Ontario Commission**

The role of the St. Lawrence-Eastern Ontario Commission should include: providing technical assistance to the three barrier system towns in preparing and implementing local land use management plans; promoting special planning studies; and review of proposed development projects that could have negative impacts on barrier system resources.

- **Provide technical assistance to local communities in preparing and implementing local land and water use management plans addressing the barrier system.**

SLEOC has an important opportunity to contribute to local efforts to guide future development and resource protection in the barrier system. SLEOC can provide important support-

ing functions for the implementation of the State's Coastal Management Program. This support can come through the provision of technical assistance to individual communities and the sponsors of development projects affecting the barrier system. SLEOC can help the towns with jurisdiction in the barrier system understand the oftentimes confusing requirements of the various federal and State regulatory programs. SLEOC can help the towns of Ellisburg, Sandy Creek and Richland develop more effective land use plans and/or regulations to guide development and protect natural resources in the barrier system.

- **Support special projects addressing the barrier system.**

A good example of the type of special project that can contribute to improved resource management in the barrier system is the ongoing Sandy Pond Resource Management Study being conducted by the Town of Sandy Creek with funding from SLEOC. This study is addressing land use planning and resource management in an area of Sandy Creek that includes the portion of the barrier system within the Town's jurisdiction. Specific recommendations for land use and resource protection will be developed in the Sandy Pond Resource Management Study.

Contingent on the future availability of funds, SLEOC should consider supporting other special studies that may address the barrier system either directly or indirectly.

- **Contribute to the protection of barrier system values through the Project Review process.**

Although the St. Lawrence Eastern-Ontario Commission does not have permitting authority and can not deny a proposed project, work on projects may not proceed while SLEOC's mandatory project review process is being carried out. SLEOC's project review often results in project modifications that can satisfy development as well as environmental protection objectives. Of all the agencies involved in the review of development proposals in the area, SLEOC has the most direct relationships with both local communities and project sponsors. In addition to



continuing to serve as a valuable mediator between project sponsors and local governments, SLEOC may also be able to provide an enhanced coordinating role between the various agencies involved in the review process and the project sponsor. Opportunities for SLEOC to contribute to more effective overall project review in the barrier system stem from the multi-disciplinary approach the agency takes to project review, its knowledge of local conditions, its understanding of regulatory requirements and its good working relationships with the towns of Ellisburg, Sandy Creek and Richland.

## FEDERAL AGENCIES

The principal role of the federal government in future management of barrier system resources will be carried out through the Corps of Engineers' Section 10 and 404 regulatory programs and the Corps' navigation-related programs. These programs should be carried out in a manner that ensures the future protection of barrier system resources. The Corps of Engineers and Fish and Wildlife Service should also support and participate in activities of the Ontario Dune Coalition.

### U. S. Army Corps of Engineers

Through its regulatory and navigation programs, the Buffalo District of the Corps of Engineers can directly and indirectly exert an important influence on the future condition and use of natural resources in the barrier system.

As described in Chapter Two, the Corps' Section 10 and 404 regulatory programs focus on proposed development activities in navigable waters and wetlands. These programs are important to protection of barrier system resources because, as emphasized throughout this report, the barrier system is an integrated natural system consisting of not only sand dunes but also beaches, wetlands and embayments. Activities affecting one component of the system have the potential to affect other components as well. While the Corps' programs do not directly address the upland and sand dune sections of the barrier systems, future development proposals that

are subject to the Corps' programs may have important indirect as well as direct effects on all barrier system resources.

Several constraints, however, affect the Corps' ability to carry out its regulatory authorities. The Buffalo District is currently overburdened with permit applications and delays of several months are now common in processing applications in the region, including applications for relatively minor projects. Because of under-staffing and the distance between the Buffalo District's main office and the eastern Lake Ontario area, the Corps is not able to conduct site visits for most permit applications in the region and relies instead on other agencies for site-specific comments and information regarding local conditions.

Also, lack of awareness of regulatory requirements on the part of some developers and negative attitudes toward land use controls on the part of others contribute to noncompliance with the Corps' regulatory programs. The Corps' ability to enforce its regulatory requirements is hindered by the lack of personnel to effectively monitor coastal development in the region. The Corps' Watertown field office with monitoring responsibilities for the entire eastern Lake Ontario and St. Lawrence River region is staffed by only one person.

In addition to the above factors affecting the Corps' review of development proposals with potential for impacting the barrier system, the relative scale of development activities in the region (in comparison to activities throughout the Buffalo District's jurisdiction) also influences the Corps' review. The Corps considers most of the permit applications now being reviewed in the eastern Lake Ontario region to be relatively minor in scope (e.g., open pile docks and expansion of existing boating-related facilities in contrast to major dredging, filling and breakwater construction as seen elsewhere on the Great Lakes). As a result, the eastern Lake Ontario region, including the coastal barrier system, is not a major area of concern for the Corps with regard to development activities and associated environmental impacts.

### Regulatory Responsibilities

Recognizing the existing constraints affecting the

Corps' review of development proposals that may impact the coastal barrier system, the Section 10 and 404 regulatory programs must continue to serve to protect the barrier system's natural values from future development pressures. To help ensure this protection, the Corps should consider the following in carrying out its regulatory review:

- **Incorporate recognition of barrier system uniqueness and resource sensitivity into the review of development proposals.**

All development proposals affecting the eastern Lake Ontario coastal barrier system should be viewed as having the potential for negative impacts on a unique and sensitive resource. In its review of development proposals, the Corps should take into consideration the potential impacts of barrier system development on adjacent wetlands and water bodies.

- **Address the potential for cumulative impacts to affect the barrier system.**

Individual projects may appear relatively minor in significance, but over a period of time these individually minor actions can cause collectively significant impacts and the piecemeal loss of important environmental resources. The Corps must consider cumulative impacts in its regulatory process, but does so primarily through the application of professional judgement applied to case-by-case reviews. The Corps should participate with other federal and State agencies concerned with resource protection in the region to address the difficulties associated with cumulative impact assessment and to develop new methods to consider cumulative impacts in its review and permitting programs.

- **Strengthen enforcement of existing requirements.**

To the extent possible, the Corps should attach added emphasis to the monitoring of development activities in the barrier system to ensure that the requirements of existing regulatory requirements are adhered to. Any unauthorized work in wetlands and navigable waters should be eliminated by the offending party without delay. "After-the-fact" permits that would bring future

violations into compliance should not be issued.

### Navigation-Related Responsibilities

In addition to its regulatory programs, the Corps' navigation-related programs may also have important effects on future resource management in the barrier system. The Corps is responsible for maintaining the Port Ontario Harbor of Refuge project and is currently evaluating the feasibility of constructing a navigation improvement project at the channel connecting North Sandy Pond with Lake Ontario. In carrying out its navigation-related responsibilities, the Corps can contribute to resource management in the barrier system in the following ways:

- **Monitor and evaluate longshore sediment transport conditions at the mouth of the Salmon River.**

In the course of maintaining the Port Ontario Harbor of Refuge project it will be necessary for the Corps to monitor and evaluate sedimentation conditions affecting the project. Studies of the effect of the north jetty on longshore sediment transport, the type of material being transported, the rate of entrance channel sedimentation and other conditions can provide important information pertinent to future barrier system management decisions.

- **Avoid future navigation improvements at North Sandy Pond that would affect the integrity of the barrier system or result in other significant adverse impacts on barrier system resources.**

In evaluating the feasibility of potential navigation improvement projects between North Sandy Pond and Lake Ontario, project alternatives that would affect the integrity of the barrier system (by dredging a new channel through the barrier, for example) should be avoided. Longshore sediment transport conditions at the North Pond inlet should also be carefully monitored and evaluated.

Also, navigation improvements should not be pursued if such improvements would stimulate additional water-related and other types of

development that would have significant adverse impacts on barrier system resources.

### U.S. Fish and Wildlife Service

In carrying out its review and commenting responsibilities relative to the Corps of Engineers' regulatory programs, the Fish and Wildlife Service should:

- Incorporate recognition of the uniqueness and resource sensitivity of the barrier system into review of permit applications to the Corps of Engineers.
- Participate with other federal and State agencies in addressing the difficulties associated with cumulative impact assessment.

In addition to its commenting role in the federal regulatory process, the FWS also manages the nation's system of National Wildlife Refuges. As described earlier, a portion of the Deer Creek Marsh area was once considered by the FWS for acquisition and designation as a National Wildlife Refuge prior to acquisition of the marsh by the State. The FWS is also currently looking at important privately owned waterfowl habitat areas throughout the eastern Lake Ontario and St. Lawrence River area that may be appropriate for acquisition in accordance with the FWS's North Atlantic Waterfowl Management Plan (see Chapter Two).

It is unlikely, however, that federal acquisition of any of the remaining privately owned wetland areas in the barrier system would prove to be feasible in the future. On the other hand, federal acquisition of State-owned lands represents a management option that has been carried out in other areas. For example, to maximize protection of the barrier and wetland areas that are currently owned by the State of New York and managed by the DEC as wildlife management areas, it is possible to consider the possibility of a future land swap between the Fish and Wildlife Service and the State of New York. Such a swap might involve the transfer of a portion of the State-owned barrier and associated wetland habitat to the federal government in exchange for federal lands elsewhere in New York State being transferred to the State. Such a land swap might

result in stricter use and management controls being imposed on portions of the barrier system.

### Other Federal Agencies

The future role of other federal agencies such as the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), the International Joint Commission (IJC) and the Department of the Interior (DOI) should also be noted.

NOAA's Office of Ocean and Coastal Resource Management (OCRM) provides the major funding for coastal resource management in New York State. In the future, additional funding is needed to continue coastal resource protection efforts. The OCRM should seek additional regulatory authority and financial resources through reauthorization of the federal Coastal Zone Management Act in 1990.

The Environmental Protection Agency has a commenting role in the Corps of Engineers' regulatory programs. Like the FWS and the Corps, the EPA should also incorporate a recognition of the uniqueness and sensitivity of the eastern Lake Ontario coastal barrier system into its review of development proposals submitted for federal permits.

In the future, the Federal Emergency Management Agency may also be involved in resource management in the area through emergency assistance to private shorefront property owners whose property is damaged by flooding and erosion. Particularly important, with regard to reducing the need for structural shore protection projects, are provisions of a 1988 amendment (Section 544 of the Housing and Community Development Act of 1987) to the National Flood Insurance Act. Section 544 establishes a new insurance plan intended to encourage shorefront property owners to relocate erosion-threatened structures before they are destroyed. Property owners with flood insurance may either demolish the threatened structure or move it further away from the shorefront. The structure must be certified by an appropriate State or local land use authority to be "subject to imminent collapse or subsidence as a result of erosion or undermining

caused by waves or currents of water exceeding anticipated cyclical levels."

The International Joint Commission's continued monitoring of lake level fluctuations and trends will provide important data pertinent to future management decisions and the projection of future erosion rates on the barrier system. The IJC should increase its public information efforts in order to more clearly describe the complexities of Lake Ontario regulation and to better address public concerns over the extent to which the regulation of flows through the St. Lawrence River, as opposed to natural factors, can influence Lake Ontario water levels.

The Department of the Interior should continue to study and evaluate the eastern Lake Ontario coastal barrier system as well as other barrier systems of the Great Lakes for possible inclusion in the National Coastal Barrier Resource System. Also, the DOI should consider the four relict dune areas for designation as National Natural Landmarks.

## EDUCATIONAL INSTITUTIONS

The beaches, sand dunes, wetlands, embayments and other resources associated with the eastern Lake Ontario coastal barrier system provide important opportunities for scientific research and study. Several public and private universities and colleges have used the various elements of the barrier system as outdoor classrooms. Some students have prepared theses and dissertations that have addressed the area and thereby contributed to the body of knowledge that exists on the barrier system. Several New York academic institutions participate in the Great Lakes Research Consortium which serves to focus and coordinate research on lakes Erie and Ontario and which is addressing a number of issues pertinent to resource management in the barrier system. In addition to colleges and universities, elementary and secondary schools in the northern New York and eastern Lake Ontario region can take advantage of the unique opportunities that the barrier system provides for learning about ecological systems and the natural environment. Public and private educational institutions can make important contributions to resource management in the coastal

barrier system.

- Promote research and study of barrier system conditions, issues and management opportunities.

The educational institutions can contribute to the body of knowledge on existing conditions in the barrier system and also identify and test various approaches for resource management through special research and study directed toward the system. Group as well as individual research and study efforts should be promoted. The educational institutions should work with government agencies, conservation organizations (including the Ontario Dune Coalition) and others concerned with resource management in the barrier system to identify specific projects and research priorities.

- Provide opportunities for training and education.

Elementary and secondary schools as well as colleges and universities should conduct field trips to the barrier system and otherwise enhance their students' research experience through use of the barrier system as an outdoor classroom. Field experience in a variety of natural science disciplines can be pursued. In addition, the colleges and universities should continue to sponsor special intern programs through which qualified students can obtain valuable experience working on projects for agencies such as the DEC and for conservation groups such as the Ontario Dune Coalition. Continuing support should be provided for TODC's Dune Naturalist Intern Program.

- Disseminate information and contribute to public awareness of barrier system resources and values.

In general, through research, special projects and other educational activities, the educational institutions should contribute to the dissemination of information on the barrier system and help increase public awareness of the need for informed resource management. Educational institutions should participate in the activities of the Ontario Dune Coalition. The Great Lakes Research Consortium should address research topics of special concern to the barrier system.

## SUMMARY OF MAJOR OPPORTUNITIES AND OPTIONS FOR IMPLEMENTING MANAGEMENT GUIDELINES AND OBJECTIVES

### PRIVATE LANDOWNERS AND CONCERNED CITIZENS

- Apply Appropriate Erosion Control Measures -
- Practice Wise Use and Development Techniques -
- Identify Violations and Contribute to Enforcement of Existing Regulations -
- Support Public and Private Resource Management Efforts -
- Use Private Initiatives to Protect Undeveloped Lands -

### CONSERVATION GROUPS

- Promote Environmental Protection Objectives -
- Review and Comment on Development Proposals -
- Actively Manage the El Dorado Beach Preserve (The Nature Conservancy) -
- Continue and Expand Environmental Advocacy Role (The Ontario Dune Coalition) -
- Work with Private Landowners to Protect Undeveloped Lands -

### TOWN BOARDS AND DEPARTMENTS

- Adopt Special Land Use Policies and Plans -
- Work with Private Landowners to Protect Undeveloped Lands -
- Consider Local Waterfront Revitalization Programs -
- Adopt Zoning and Other Land Use Requirements -

### COUNTY AGENCIES

#### Planning Departments

- Assist Communities in the Review of Development Proposals -
- Assist Communities in the Formulation of Plans and Land Use Requirements -
- Address Barrier System Protection in Future Updates of the County Land Use Plans -

#### Soil and Water Conservation Districts

- Provide Technical Assistance for Nonstructural Erosion Control -

#### Environmental Management Council

- Conduct Educational Programs and Special Projects -
- Assist Communities in the Review of Development Proposals -

#### Health Department

- Strengthen Enforcement of Health Code Requirements -

Figure 86: Summary of Major Opportunities and Options for Implementing Management Guidelines and Objectives.

**SUMMARY OF MAJOR OPPORTUNITIES AND OPTIONS FOR  
IMPLEMENTING MANAGEMENT GUIDELINES AND OBJECTIVES  
(Continued)**

**STATE AGENCIES**

Department of Environmental Conservation

- Prepare Detailed, Long-Range Management Plans for Each WMA -
- Coordinate Resource Management Approaches Between Regions 6 and 7 -
  - Strengthen Enforcement of Existing WMA Regulations -
  - Place New and Improved Signs in the WMAs -
- Consider Future Acquisition of Lands Currently Under Private Ownership -
  - Consider Future State-Federal Land Swap -
  - Establish Barrier System Environmental Education Center -
- Improve Coordination with OPRHP for Management of Lakeview WMA and Southwick Beach SP -
- Consider Transfer of Some Authorities in Portions of Deer Creek and Lakeview WMAs to OPRHP -
  - Incorporate Recognition of Barrier System Uniqueness & Sensitivity into Permitting Processes -
  - Address the Potential for Cumulative Impacts to Affect the Barrier System -
  - Strengthen Enforcement of Existing Permit Requirements -

Department of State

- Incorporate Recognition of System Uniqueness & Sensitivity in Coastal Program Consistency Reviews -
  - Provide Funding and Technical Support for Special Studies and Planning Efforts -

Office of Parks, Recreation and Historic Preservation

- Improve Coordination with the DEC for Management of Southwick Beach SP and Lakeview WMA -
  - Consider Expansion of Southwick Beach State Park to Include a Portion of Lakeview WMA -
  - Consider Management of the Barrier Portion of the Deer Creek WMA as a State Park Facility -

Sea Grant Extension

- Provide Technical Assistance and Information to Private Land Owners -
- Provide Information on Fluctuating Lake Levels and the Causative Factors -
  - Conduct Special Studies and Research -

St. Lawrence-Eastern Ontario Commission

- Provide Communities with Land and Water Use Planning Assistance -
  - Support Special Projects Addressing the Barrier System -
- Contribute to Protection of Barrier System Resources through Project Review Process -

Figure 86: Summary of Major Opportunities and Options for Implementing Management Guidelines and Objectives...(continued).

**SUMMARY OF MAJOR OPPORTUNITIES AND OPTIONS FOR  
IMPLEMENTING MANAGEMENT GUIDELINES AND OBJECTIVES  
(Continued)**

**FEDERAL AGENCIES**

Corps of Engineers

- Incorporate Recognition of System Uniqueness and Sensitivity into Permitting Processes -
  - Address Potential for Cumulative Impacts to Affect the Barrier System -
  - Strengthen Enforcement of Existing Permitting Requirements -
  - Monitor and Evaluate Longshore Sediment Transport Conditions -
- Avoid Future Navigation Improvements at North Pond with Adverse Impacts on the Barrier System -

Other Federal Agencies

- Incorporate Recognition of System Uniqueness and Sensitivity into Permit Comments -  
(FWS and EPA)
  - Address Difficulties Associated With Cumulative Impact Assessment -  
(FWS and EPA)
  - Continue Coastal Management Support -  
(NOAA)
  - Provide Relocation Assistance to Shorefront Property Owners -  
(FEMA)
- Increase Research and Public Information on Lake Levels and Water Regulation -  
(IJC)
- Evaluate Barrier System for Inclusion in National Coastal Barrier Resource System -
  - Consider Designation of Relict Dunes as National Natural Landmarks -  
(DOI)

**EDUCATIONAL INSTITUTIONS**

- Promote Barrier System Research and Study -
- Provide Opportunities for Training and Education -
- Disseminate Information and Contribute to Public Awareness -

**Figure 86: Summary of Opportunities and Options for Implementing Management Guidelines and Objectives...(continued).**



**APPENDIX:**

**SOURCES OF INFORMATION  
PERTINENT TO RESOURCE MANAGEMENT PLANNING  
IN THE EASTERN LAKE ONTARIO  
COASTAL BARRIER SYSTEM**

## INTRODUCTION

This Appendix contains a bibliography of various studies, documents, maps and other sources of information on the eastern Lake Ontario coastal barrier system. Sources listed include reports that directly address the barrier system, studies that have addressed the larger region within which the barrier system is located and some relevant sources of information from other states and areas.

Information sources are listed by subject (e.g., geology and soils, natural resources inventories, State wildlife management areas) and by sources (e.g., federal agencies, New York State agencies). Persons that can be contacted for additional information within each agency and organization are also listed.

Some references judged by the authors of this report to be particularly interesting and valuable are noted with an asterisk (\*).

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Jefferson County Soil and Water Conservation District

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**Towns****Town of Richland**

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